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TORONTO

NATIONS AS NEIGHBORS

BY

LEONARD O. PACKARD

HEAD OF THE DEPARTMENT OF GEOGRAPHY
TEACHERS COLLEGE OF THE
CITY OF BOSTON

AND

CHARLES P. SINNOTT

HEAD OF THE DEPARTMENT OF GEOGRAPHY
STATE NORMAL SCHOOL
BRIDGEWATER, MASSACHUSETTS

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PREFACE

WHETHER we wish it or not, the United States must play an increasingly important part in world affairs. It is therefore a matter of the highest importance that our citizens be prepared to take intelligent action upon all questions pertaining to our relations with other nations. An enlightened public opinion can come only as each citizen thinks for himself and is not at the mercy of the professional politician. To promote such citizenship and to help in the development of higher national ideals have been the controlling motives in the preparation of this text.

To understand and appreciate the contributions which each nation makes to the world's welfare is one of the surest ways of developing good will among all peoples. Anything that interferes with or helps in the growth of any one nation is, therefore, a matter of concern to all other nations. Our own country, with its abundant resources, its great manufacturing plants, its world-wide trade, and the ideals of its people, stands forth as one of the most influential countries of the world. Great as our country is, however, it is dependent in many ways upon our neighbor nations, and it is necessary that we recognize the part which they play in meeting the world's needs.

At the present time, the character and scope of history study in America is receiving searching consideration and systematic comment. Various defects have been brought to light, and two of these are most important.

In the first place, American history is too often left unrelated to European history, which really constitutes the background. This defect tends to isolate and to over-emphasize the apparent accomplishments of our country and to omit adequate recognition of the contribution of other peoples. This incorrect and disproportionate treatment of American history, if continued, would lead to a most unfortunate and disastrous result. It would

foster a narrow, if not conceited, nationalism, rather than an intelligent and ethical internationalism of spirit and point of view.

In the second place, history is too often presented as an independent subject, too remotely separated from geography, a science which constitutes the natural foundation of history. While scientific authorities have written in detail upon this fundamental relationship between geography and history, it is true, nevertheless, that in our historical study and reading, generally, this vital connection is not adequately shown. When this defect is remedied, the student and reader of history will discover a natural sequence of cause and effect in historical events, and they will have a greater understanding and love of a study that seems real and logical to them.

The authors have endeavored to stress other important lessons that geography has to teach. Among these are the necessity of conserving great national resources and of appreciating the dependence of one part of our country upon the other parts as well as the interdependence of the great producing regions of the world. Another aim has been to emphasize the dependence of the life and occupations of any locality upon the resources of the natural geographic region of which it is a part and upon its accessibility to the resources of other regions.

It has also been a purpose to treat with considerable fullness the resources, industries, commerce, and relationships of the leading nations of the world. That this might be done, it has been necessary to omit many small or relatively unimportant countries or regions. It is felt that the text is thereby distinctly strengthened.

It has seemed advisable both to the authors and to the publishers to equip this book to the fullest extent with helps to study, such as maps in color and in black and white, illustrations, and suggestive questions to encourage and clarify thought. Every effort has therefore been made to secure a bountiful supply of photographs that really illustrate; of detailed maps, graphs, and diagrams that clarify and vitalize the reader's concepts in matters of detail; and comprehensive maps and statistical tables for ready reference.

The authors are indebted to Miss Ona I. Nolan of Boston, who read critically a large part of the manuscript and wrote many of the problems and exercises. She has also rendered excellent service in suggesting adaptations of the subject matter to the interests of various classes of readers.

The authors are also under obligations to many corporations, chambers of commerce, and government departments for information and for permission to use illustrative material. They wish to acknowledge especially the assistance given by the United States Department of Agriculture, the United States Bureau of Foreign and Domestic Commerce, and the Pan-American Union. Specific acknowledgments are made in connection with each illustration.

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PART I
INTRODUCTION
MAN'S RELATIONSHIPS



NATIONS AS NEIGHBORS

CHAPTER I

HOW NATIONS DEPEND UPON ONE ANOTHER

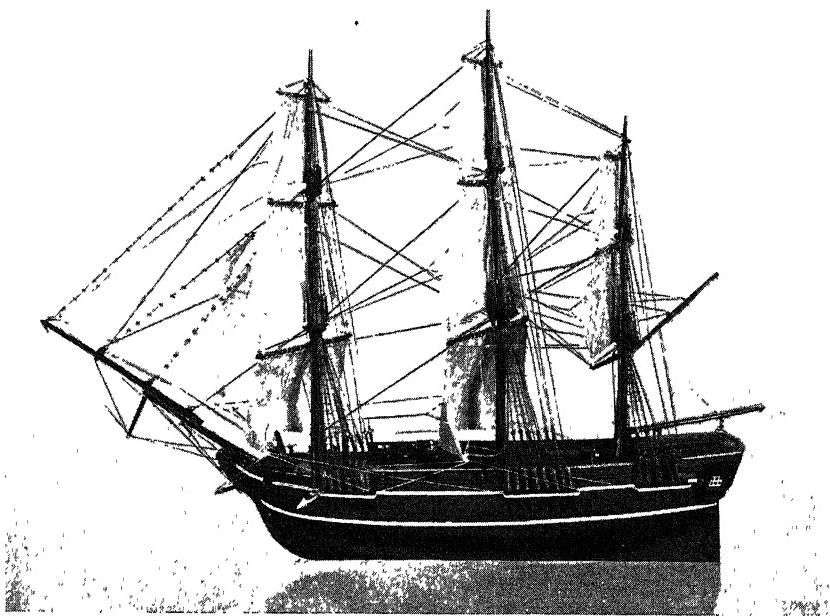
How the early colonists supplied their needs. The early colonists of our country lived a very simple and independent life. Their own neighborhood was made to furnish most of the materials used in the home. They raised their own wool and linen and made their own homespun cloth. Most of the food was produced upon their own farms or taken from the near-by sea. Game was abundant and furnished both food and clothing in considerable quantities. The great forests supplied the needed fuel and lumber. Spinning wheels, looms, farming tools, and household implements were largely made in the home workshops.

It is interesting to read of the simple implements and the simple methods used by these people in providing all the necessities of life. The colonists did not have as much in their homes as we have in ours; but the necessities were there, though often at the cost of much labor.

Colonial trade had an early start. The life of these colonists was largely independent of other people and other lands. Very early, however, they built their small vessels (Fig. 2) and began to carry on trade with the other colonies and other countries. They found this much more profitable than to attempt to produce everything for themselves. They obtained sugar and molasses from the West Indies and tobacco and rice from the Southern colonies, in exchange for flour, beef, cereals, fish, and lumber of their own production. From Europe they obtained many manufactured articles which, on account of the lack of tools, they found it difficult to make for themselves. More and more they came to depend upon their neighbors for things that they could not con-

veniently supply for themselves. Their trade grew until a considerable commerce was developed.

How we depend upon others. We have only to compare our own lives with those of the early colonists to realize how much more we depend upon others than they did. Make a list of the more useful articles in your home. Check those that are produced



Courtesy Philadelphia Commercial Museum.

Fig. 2.—The *Canton*, a Philadelphia-built ship, was the first ship to make the voyage from Philadelphia to China (1785-87).

in the neighborhood and those that have come from a distance. You will find that many of these useful articles have come from far-away lands. Our dependence upon others is much greater now than formerly, and is likely to increase in the future.

Why our dependence upon others is increasing. As people advance in civilization, their needs are greatly multiplied. No single community in a highly civilized country can now produce all the different kinds of goods that are used by its people: This

makes it necessary to depend upon different regions to supply different needs. The more highly a nation is civilized, the more it will depend upon others, and the more goods it will have to give in exchange for what it receives from others. This is why all enlightened nations are engaged in commerce (Fig. 3).



Courtesy Canadian Pacific R. R. Company.

Fig. 3.—This great steamship is landing at Quebec after her voyage across the Atlantic with European goods for America. She is too big to dock at Montreal. The Canadian Pacific owns a fleet of such steamers, which connect the terminals of that railway with the ports of Europe, Asia, and Australia. Contrast the work of such ships with that of the little sailing vessels of early days (Fig. 2).

Many articles which we now regard as among the necessities of life were either unknown or looked upon as luxuries in the early days. Can you make a list of such articles? Goods are now much more abundant and in greater variety than ever before.

Why goods have become abundant. Many new countries have been settled by progressive people since early colonial days,

and these have become important producing areas. Parts of South America and Africa, Australia, New Zealand, and the western part of our own country are among these newer areas. Some very old countries, like China and Japan, refused for many centuries to deal with other nations. During the last century, however, they have changed their policies and are now anxious



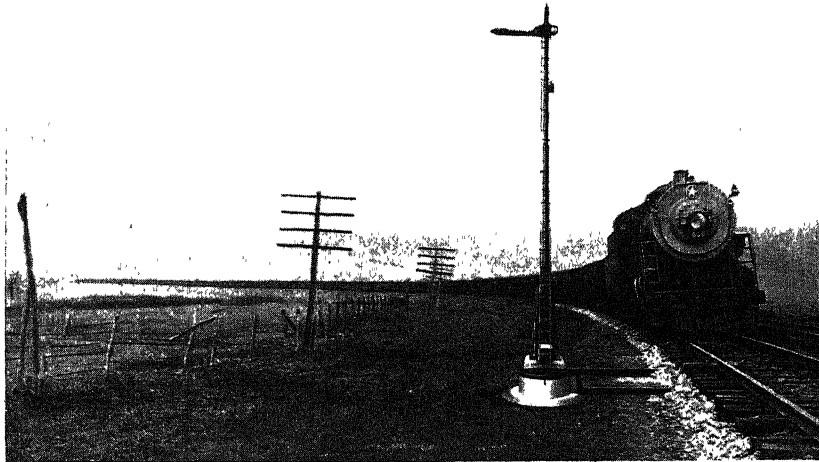
Courtesy Seattle Chamber of Commerce.

Fig. 4.—An electric power plant between Seattle and Tacoma. Great generators are run for the production of powerful currents of electricity. This is extensively used in manufacturing and transportation. Notice the tremendous rush of water through the sluiceways. What gives it such force? Why cannot rivers on plains be used for power?

to trade with all the world. All of these countries, both new and old, many of which are densely populated, are now supplying many of the great commercial articles of the world. Their products are going into the homes of all civilized nations.

Again, the natural resources of countries are more fully developed than formerly. This development has been greatly aided

by the use of steam, water power, electricity, and gasoline. In our own country farming, mining, lumbering, and manufacturing have greatly increased because we have extensive farm lands, a good climate, a rich supply of minerals, many great forests, and a great variety of raw materials for use in our factories. We have been able to produce more goods than we could use ourselves and have had many to exchange with our neighbors, whose needs have



Courtesy Baldwin Locomotive Works, Philadelphia.

Fig. 5.—A great freight train of 100 cars carrying 7842 tons. Contrast the freight-carrying power and speed of this train with that of the old Conestoga wagon. How has it helped to make goods cheaper?

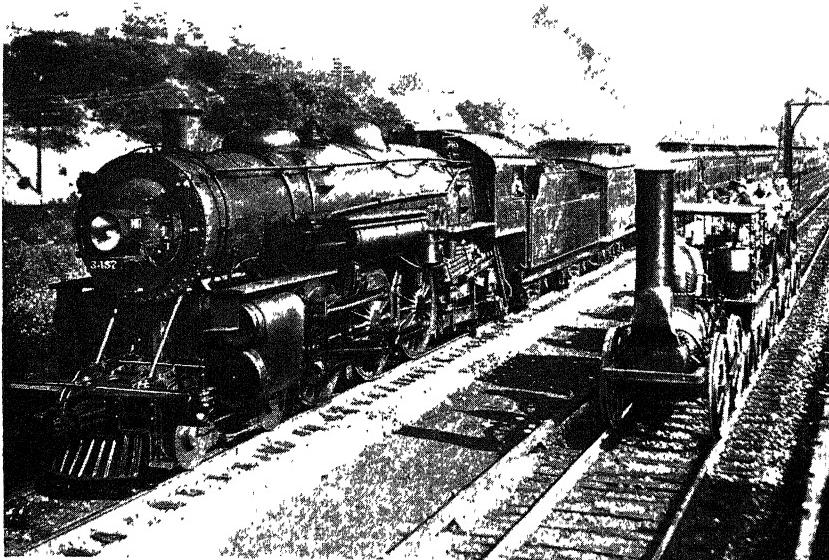
been continually increasing like our own. Other nations have developed their resources in much the same way that we have ours.

The use of machinery has greatly increased and has made goods abundant and cheap. One machine often does the work of many men. Can you give an example of this? All progressive nations are now making use of many labor-saving machines.

Each country makes a specialty of producing certain kinds of goods. Australia has her wool; Scandinavia, her lumber; Great Britain, her textiles; Brazil, her coffee and rubber;

Jamaica, her fruits; and the United States, her cotton, corn, beef, and pork. The people of these countries have become skillful in the production of certain goods and are able to supply them in large quantities to other people.

By what is known as *division of labor*, one person learns to do a single kind of work and becomes an expert in it. Production is



Courtesy New York Central Lines.

Fig. 6.—The picture shows the first steam passenger train operated in New York State (1831) steaming beside the modern Twentieth Century Limited. The engine is the De Witt Clinton wood-burning locomotive. All this progress in transportation has been made in less than a century.

therefore increased and the cost of goods is lowered. Countries, like our own, Great Britain, and Germany, with much division of labor have become great industrial and commercial nations.

By the application of science to industry great progress has been made in methods of production (Fig. 4). Our agricultural colleges are teaching how to farm in a scientific manner, and our industrial and technical schools are teaching scientific methods in industry.

Fortunately improvements in methods of transportation have kept pace with those of production. On the ocean are great steamships many times as swift and many times as large as the small sailing vessels of colonial days. These vessels are provided



From "The Covered Wagon" — Courtesy Publicity Dept. of Criterion Theatre.

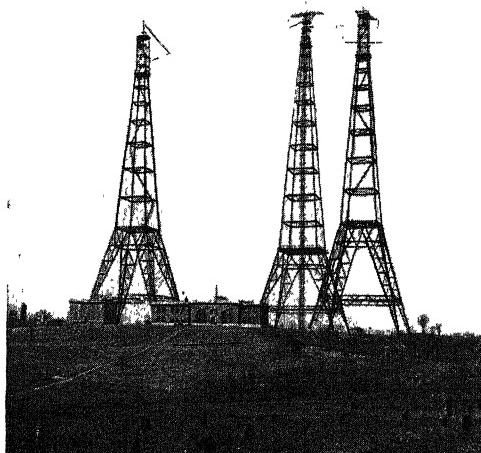
Fig. 7.—The prairie schooner was a modified type of the Conestoga wagon. It was generally used by the pioneer in his long journey across the country to his new home in the West. Contrast this with modern methods of travel and transportation.

with cold-storage plants, making it possible to carry perishable cargoes long distances — a thing unknown in early days. On land railway freight and passenger trains (Figs. 5 and 6) have taken the place of the freight wagon (Fig. 7) and stagecoach. This means that we are able to obtain goods quickly and at a

moderate cost from the parts of the world where they are produced in abundance.

Nearly all parts of the world to-day are bound together by telegraph wires and cables. Wireless stations (Fig. 8) make it possible to send telegraph and radio messages almost any distance without the use of cable or wire. By these quick methods of

communication much time is saved. A merchant in Liverpool wishes to buy a thousand barrels of flour in New York. He cables an order to his agent in that city, and the flour is placed upon the next steamer sailing for Liverpool. The merchant may thus receive his goods in a week or ten days. This prompt delivery reduces the cost and aids in the exchange of goods.



Courtesy U. S. Navy Department.

Fig. 8.—From the United States Radio Station at Arlington, Virginia, messages can be sent to vessels anywhere along the coast of the United States and across the Atlantic to foreign countries.

people live more comfortable lives to-day than ever before.

Nations are becoming nearer neighbors. These improved methods of transportation and communication have brought the peoples of the world much nearer together in point of time than ever before (Figs. 9 and 10). Because we have come to depend so much upon other people, our welfare is dependent upon theirs. For this reason it is a matter of great concern to the whole world when two nations go to war. This is why the League of

Nations was established and why serious-minded people everywhere are anxious to prevent war.

How nations should deal with one another. Individuals like to have for their neighbors people of good character — neighbors who keep the peace, who keep their property in an attractive and healthful condition, and who do not annoy in any way those living near by. They also expect their neighbors to be reliable, to keep their promises, and to respect the rights and property of others. Nations expect much the same qualities in their neighbors. Proper regard for the rights of others is a quality to be desired among nations quite as much as among individuals.

How peace may be preserved. When workmen and employers cannot agree on questions in dispute, they sometimes refer the matter under discussion to a few men chosen by both parties. Each party agrees to abide by the decision when made ; each believes these men will decide the matter fairly. Such a method of settlement is known as *arbitration*. Governments often settle their differences in the same way. A country desiring only what is fair will be willing to settle most questions in dispute by this method. The willingness of nations to deal fairly with one another, and to keep their promises, helps greatly in preserving peace.

On the other hand, if a nation looks upon its treaties merely as "scraps of paper," other nations cannot be expected to trust it. If nations lack confidence in one another, many kinds of trouble may arise and peace will be endangered. Belgium showed her character in the World War by keeping her treaty even though it meant the loss of many thousand lives and the destruction of her homes and industries. While Belgium lost much in the war, she gained in return the respect and gratitude of the world.

Strong nations protect the weak ones. It is true that in many instances strong nations have taken advantage of weaker ones and sometimes have crushed them. Some nations are still willing to take such advantage in matters of territory or trade. Nevertheless it is the spirit of the age to protect rather than to destroy the weak. There would have been no Belgium to-day had not the stronger nations come to her rescue at the time of the World War when she was defending the civilization of the world. Cuba was



Courtesy American Telephone and Telegraph Company.

Fig. 9.—An historic event in the development of radio. President Harding's oration over the body of an unknown soldier on Armistice Day, 1921, at Arlington, Virginia, being broadcasted by telephone.

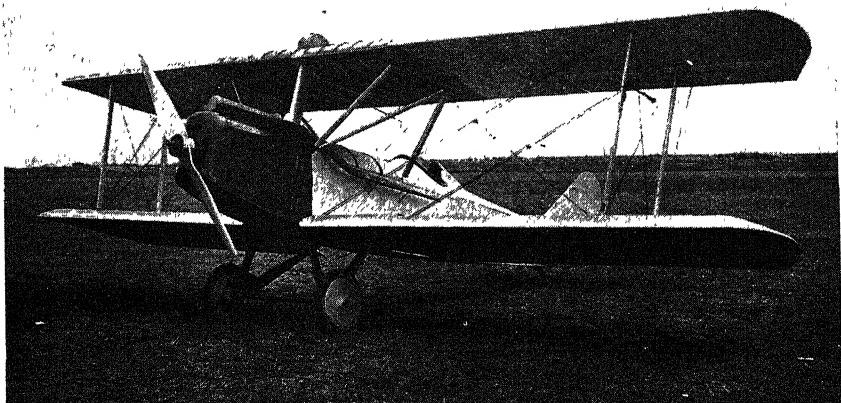
freed from the cruel rule of Spain and given her independence through the help of the United States. Our country's opposition to further colonization of the Western Hemisphere by European nations has doubtless protected our southern neighbors from foreign invasion or colonization. The treaty of Versailles definitely provided that weak peoples should be placed under the protection of the strong nations.

Great inventions benefit the whole world. America has given the world the telegraph, the telephone, and the airplane; and Italy has given the wireless. Englishmen invented the great spinning and weaving machines. X-ray photography has come from Germany. All nations have profited by these inventions, which are only a few of the many given to the world by different nations.



Fig. 10.—Audiences in San Francisco (upper picture) and in New York (lower) listening to President Harding's address by means of the telephone amplifier. To-day we listen to such addresses in our own homes through private radios.

During the last hundred years no other nation has made so many useful inventions as the United States. This is especially true of our agricultural machinery, for the American farmer has needed it with his many acres and limited help. This machinery has gone into all parts of the world and is doing much to revolutionize the methods of agriculture even in the older countries of Europe.



Courtesy Aeronautical Chamber of Commerce of America.

Fig. 11.—One of the airplanes used in carrying United States mail. Regular mail lines are now established. Mail is now taken across the continent in two or three days.

The typewriter, sewing machine, cash register, and steamboat were also invented in the United States.

Nations profit by the experiences of others. Each nation has something to teach the others. Figure 12 shows a school in China entirely supported by American money. Chinese and Japanese students often attend the universities of Europe and America. They come to study our civilization as well as the various subjects taught in the universities. On their return home they become the teachers and leaders of their people. Students from many other

lands are doing the same thing. Our own students go to Europe for study and European students come here. Professors in American universities exchange work for a year or more with those of Europe. Americans go abroad for study, travel, or business, and people of other lands visit America for the same purposes. We can readily understand how all this helps nations to gain new ideas and to progress more rapidly.



Courtesy the A. B. C. F. M.

Fig. 12.—Just up from the athletic field. This beautiful school building with its excellent equipment has been given by Americans to help educate the young people of China.

Nations join in fighting disease. When the successful control of any disease becomes known in any country, the results are published at once for the good of the world (Fig. 13). Many of our universities and institutes are carrying on this work of conquering disease, not only for our own country but for the world at large.

Jenner, an English country doctor, discovered the method of vaccination by which smallpox has been brought under control in all enlightened nations. Pasteur, a French chemist, taught the world how to fight disease through the destruction of germs. Our own countryman, General Gorgas, has taught us how to fight yellow fever by the destruction of germ-carrying mosquitoes.



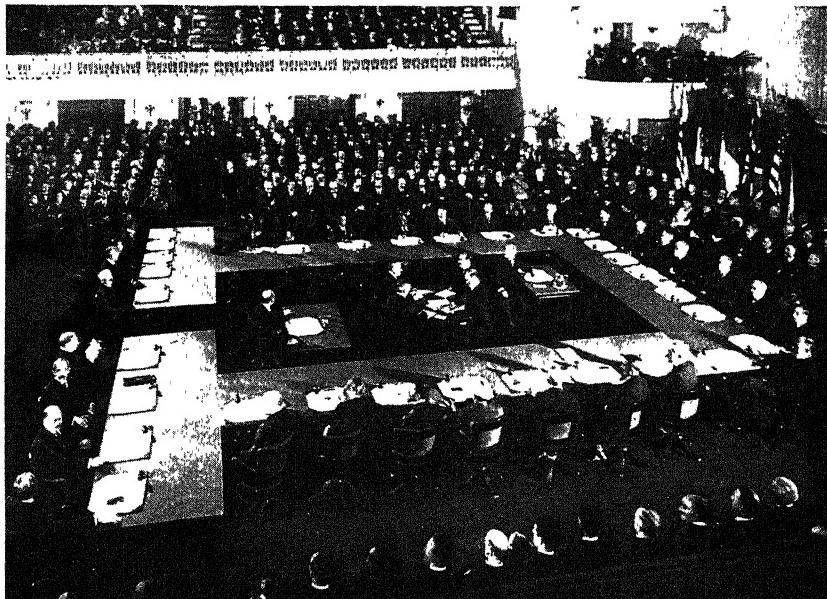
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Fig. 13. — These men are spraying a body of stagnant water with oil. The film of oil upon the water surface will prevent the young mosquitoes from breathing. If allowed to live they will spread malaria and yellow fever by carrying the germs from sick to well people.

This method has become so effective that the disease is practically mastered in our own country and in the countries of our near-by neighbors. Many other diseases are being studied in similar fashion and with excellent results.

Nations unite to prevent war. The nations of the world are so anxious for peace that they are making united efforts to preserve it. In 1899 and 1907 peace conferences were held at The Hague

in Holland. These were attended by delegates from the principal nations of the world. Such topics as arbitration, disarmament, humane methods of warfare, and other questions relating to peace plans were discussed. These conferences helped to unite the nations in their efforts to prevent war and to create a strong sentiment in favor of peace.



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Fig. 14.—A scene at the international conference in Washington on the limitation of armaments. The delegates are seen seated about the conference table. The flags are those of the nations represented. Great audiences listened to the discussions, and papers in all parts of the world published daily accounts of the proceedings.

At the close of the World War the League of Nations was formed. The purpose of this was to unite all nations in an effort to make war impossible.

In 1921 President Harding called an international conference to meet in the city of Washington to discuss the matter of limitation of armament by the great powers (Fig. 14). Other matters relating to the preservation of peace were also discussed. The

nations taking part in this conference were Great Britain, France, Italy, Japan, Belgium, China, Holland, Portugal, and the United States. These nations agreed to reduce greatly the size of their navies, to restrict the use of submarines, and to prohibit the use of poisonous gas in warfare. Several matters in dispute between China and Japan were practically settled, and the United States, Great Britain, France, and Japan agreed to respect one another's island possessions in the Pacific, to limit the fortifying of these islands by the respective nations owning them, and to settle by round table conference all questions that might arise between them concerning the islands of the Pacific Ocean. Each nation represented at the conference made evident its determination to settle international differences by conference rather than by war.

All these movements have been for the purpose of uniting the nations in their efforts to save the world from the curse of war. Perhaps you can think of other ways in which nations help one another. May we not say, from all that we have studied in this chapter, that the whole world is truly our neighbor?

QUESTIONS AND PROBLEMS

1. New England colonists began to build ships at an early date. Did the Southern colonies do the same? Explain.
2. Name several regions that have become large wheat producers during the last hundred years. In what ways has this benefited other parts of the world?
3. How do you account for the fact that farmers raise larger crops now than in colonial days?
4. Fresh oysters from Chesapeake Bay may now be bought in the markets of Chicago. Explain how this is possible.
5. If the ports of the United States were blockaded, could our country produce enough food, clothing, lumber, coal, and iron to meet our needs? Make a list of materials in common use that we should have to do without either wholly or in part.
6. What necessities of life does your own community produce? Which of these, if any, are sent to other communities?
7. How does division of labor help your own community?
8. What steps have the great powers taken to prevent future wars, or to make warfare less inhuman if wars should occur?
9. With what foreign nations have we the greatest need of "neighborly" relations?

SUGGESTED PROJECTS AND EXERCISES

1. Bring to the class interesting books, pictures, articles, and implements illustrating the simple life of early days.
2. Find out and report to the class how mail and freight were carried and how people traveled in colonial days. Contrast these methods with those of the present day.
3. Tell the story of the Erie Canal — how it came to be built, what was expected of it, what it accomplished, and why it became unimportant.
4. Show by a set of pictures or drawings the great improvements that have been made in ships since early days.
5. Find out and tell the class the important facts about the invention of the telegraph, telephone, wireless, and radio.
6. Appoint a committee to find out and report to the class how the following persons have helped to make nations more neighborly: Morse, Howe, Har-greaves, Fulton, Bell, Jenner, Marconi, Pasteur, Gorgas.

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CHAPTER II

HOW NATURAL CONDITIONS INFLUENCE MAN'S LIFE

If we could visit such lands as Holland, Norway, or Sweden, Arabia, Brazil, or China, we should find the home life, the games, the work of the people, and the products so unlike our own as to make us wonder why there are these great differences.

Man's life is greatly influenced by the natural conditions which surround him. In Norway, for instance, the rugged surface makes agriculture unprofitable; but the fine harbors and excellent fishing grounds along the coast have given the country its great fishing industry and have made of Norway a nation of fishermen and sailors. In this chapter we are to study some of these *natural conditions* that have done so much to influence the life of man.

CLIMATE

How climate influences commerce and industry. Over the earth, as a whole, there is a great diversity of climate. This results in a great variety of plant and animal products. These furnish a large part of the materials for commerce and industry.

Climate also limits the distribution of population. Relatively few people can ever make their homes in the cold polar regions or in hot, dry deserts. This is mainly because of the scarcity of plant and animal life so necessary to man.

The greatest nations of the world are in the temperate regions. Can you think of any great civilizations of the tropical regions? In the temperate regions constantly changing conditions which come with the passing of storms, cold waves, and the seasons tend to stimulate human energy and promote progress. Men have to prepare for long, cold winters and short, hot summers. This means hard work and much forethought. People would starve to death or freeze if they were to take life as easily in the cold

temperate parts of the earth as they do in the tropical regions. This necessity for vigorous activity creates habits of industry and results in progress. We sometimes think that the necessity for hard work is a misfortune, when in reality it is a blessing. People in the tropical regions have to work but little to supply



Courtesy United Fruit Company.

Fig. 15.—In moist tropical regions, bananas like those shown in the picture grow rapidly and give large quantities of excellent food with comparatively little labor. Does this tend to make the people industrious or indolent?

their needs (Fig. 15). This hinders rather than helps in their development. Can you explain this?

If we are to understand the great industries, the commerce of the world, and the kind of lives that people are living in any particular locality, we must have some knowledge of climate. Let us remember that the climate of a place is its average weather condition and has to do mainly with temperature and moisture.

Conditions affecting temperature. The sun's rays become more and more oblique as we travel from the equator toward either pole. Why should this tend to make the polar regions cold and the equatorial regions hot?

When one goes to a great height in an airplane or on a high mountain, it grows very cold, even in summer. One might actually freeze to death in summer over a warm part of the earth if he were to go to a very great height. High mountains or plateaus are, therefore, cooler than lowlands.

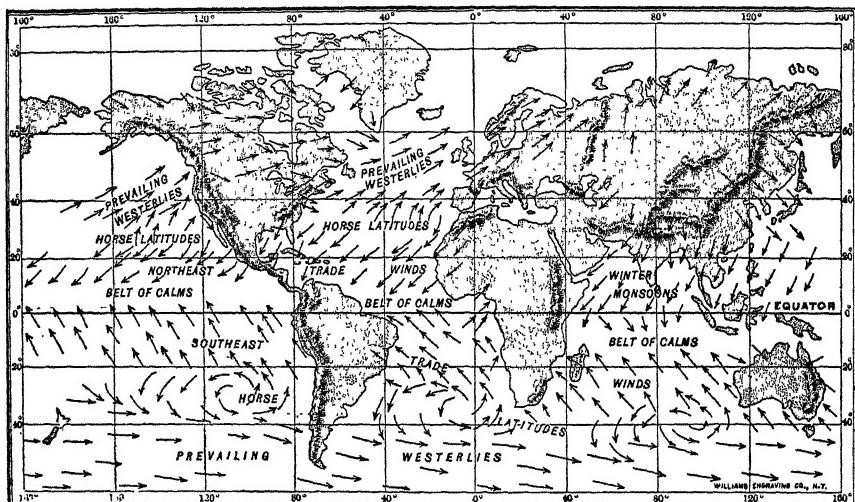


Fig. 16.—A diagram to show the principal wind belts of the earth.

How altitude affects rainfall. Warm air can hold more moisture than cool air. If air containing much moisture is cooled, the moisture is condensed. In this way clouds, rain, and snow are formed. When great masses of air move upward, as they do when they pass over great mountains like the Himalayas, cooling takes place, condensation occurs, and rainfall is likely to result on the windward side of the mountains. Clouds often form high up on mountains when it is perfectly clear below.

Winds distribute heat and moisture. Winds carry warm air into cool regions and cool air into warm regions (Fig. 16). Countries far to the north often have a comparatively warm climate if

the prevailing winds come from a warm region. Norway, for example, has its winter winds blowing from over the comparatively warm Atlantic. This makes Norway's winters much warmer than they would otherwise be. Her harbors are thus kept open, and her shipping can go on throughout the year. Labrador, on the other hand, has its winter winds from the cold northern parts of North America. This makes Labrador much colder than Norway, in spite of the fact that Labrador lies farther to the south. The harbors of Labrador are tightly frozen throughout the winter. Our own North Pacific coast is warmer than our North Atlantic coast. Why?

Winds distribute moisture in much the same way that they do temperature. The climate of any country is, therefore, largely determined by the prevailing winds that blow upon it. Figure 16 shows wind and calm belts of the world. The direction of a wind is named according to the direction from which it comes. The arrows indicate the average direction of the wind throughout the year in different parts of the world. Study this chart to learn the four great wind belts and the three calm belts; namely, *northeast trades*, *southeast trades*, *prevailing southwesterlies* of the northern hemisphere, *prevailing northwesterlies* of the southern hemisphere, *equatorial belt of calms*, and the *horse latitudes*, or *tropical belts of calms*. In which belt do you live? In which belt is most of North America and most of Europe? These belts move northward in summer and southward in winter.

How the ocean affects climate. In winter, air over the ocean is warmer than air over the land in corresponding latitudes. The reverse is true in summer. This is because water heats slowly in summer and cools slowly in winter, while land heats quickly and cools quickly. The temperature of the air over the ocean, therefore, varies less than over the land. For this reason, places near the ocean are likely to have a more even temperature than those farther inland (Fig. 17). This is particularly true when the prevailing winds come from the ocean. Can you give examples of this?

There is also more moisture in air over large bodies of water than over land. When winds from the warm ocean blow over land

they bring warmth and moisture to the land (Fig. 18). As they cool, rain falls. The farther they go over land, the less moisture they have left to give. When winds have passed over mountains, they have but little moisture to give to the country beyond. Very high parts of mountains and plateaus are likely to be dry, as the air which passes over them loses much of its moisture before it reaches such high altitudes. For these reasons the



Fig. 17.—The Hawaiian Islands owe their warm, even temperature in a large measure to the growth of pine-trees.

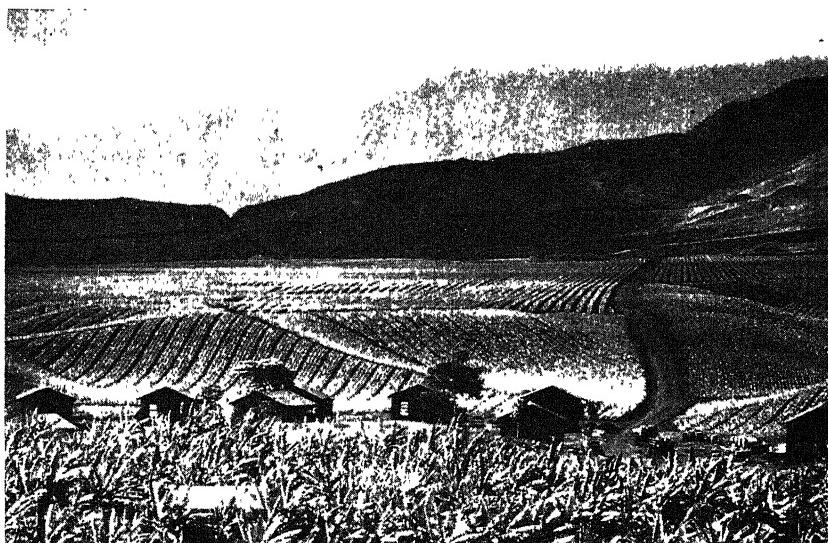
south side of the Himalaya Mountains is very wet but the highlands of Tibet are very dry.

All these facts help us to understand that climate depends upon several conditions rather than upon a single one. Can you name these conditions?

SOIL AND LAND FORMS

How plains influence human activities. Without soil we could have no plants; without plants animals could not exist; man depends upon both plants and animals. A good climate would be

of little use to us without the necessary soil, and good soil could serve no useful purpose without the proper temperature and rainfall. Man has therefore most frequently sought well-watered plains of the temperate zone as places for his habitation. There are several reasons why he generally chooses plains in preference to mountains. The soil of plains is finer, deeper, and more fertile than that upon the sides of hills or mountains. The fine



Courtesy Association of Hawaiian Pineapple Canners.

measure to the warm ocean waters that surround them. These conditions favor apples and bananas.

materials of the mountains are washed down and spread out upon the plains, leaving the slopes with thin, coarse soil. The level land with its fine soil is easily cultivated and is likely to yield good crops (Fig. 19). People can occupy the entire plain, communicate with each other easily, build roads everywhere, and readily exchange their goods. Under such conditions they coöperate with each other and learn the best ways of doing work. All this is an aid to civilization. Most great cities are located either upon plains or lowland country. Study your maps to see that this is true. —

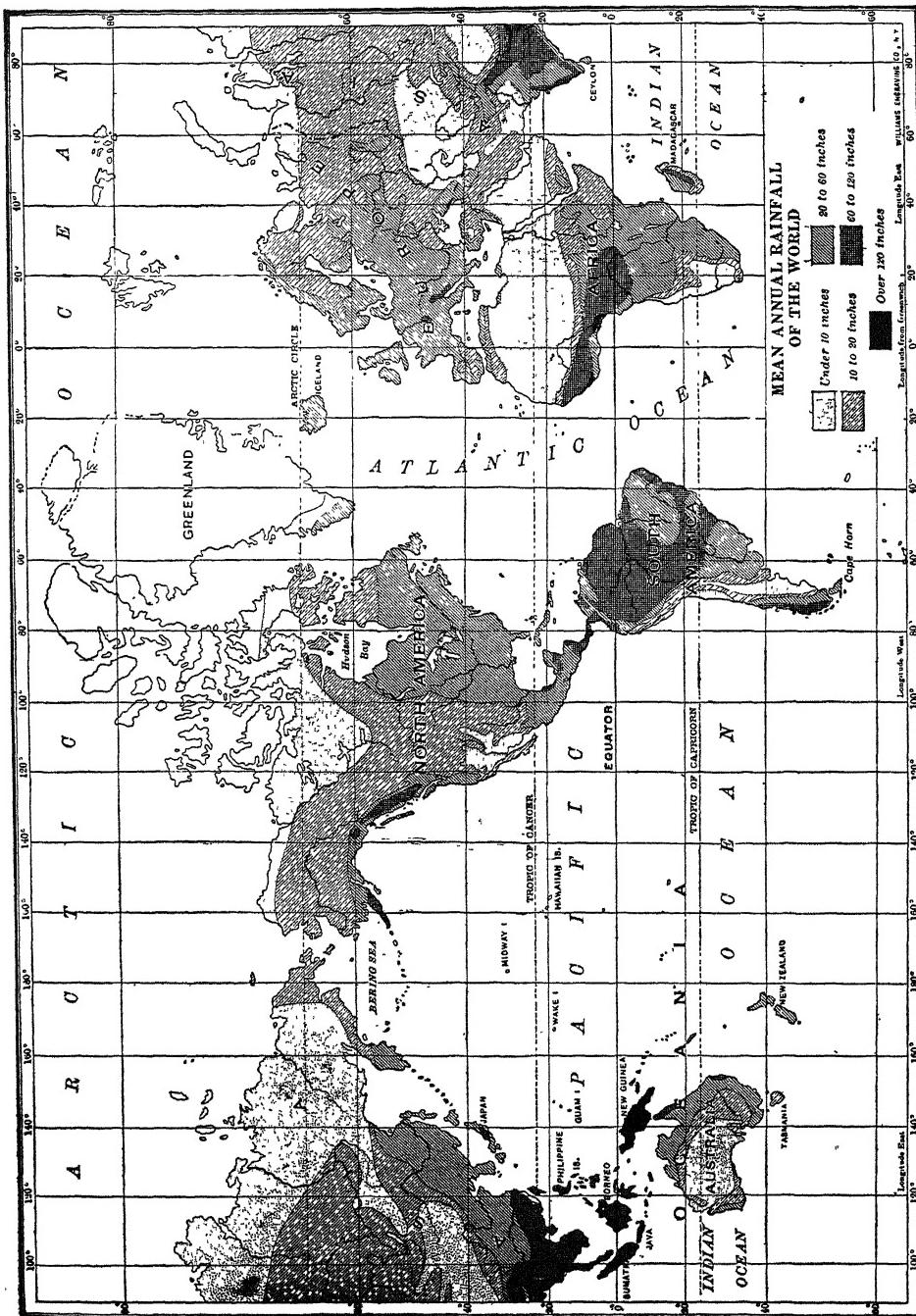


Fig. 18.—World distribution of rainfall.

How mountains influence human activities. As mountains are not well suited to agriculture, forests are often allowed to grow upon them. Much of the world's lumber has come from these mountainous regions. The Sierra Nevada and Cascade ranges are good examples of such regions. The lower slopes of mountains



Courtesy Department of Immigration and Commerce, Ottawa, Canada.

Fig. 19.—The extensive fertile plains of western Canada are making that region one of the important agricultural sections of the world.

often furnish good pasture lands like those in Norway and Switzerland.

Rivers cut deep valleys in mountain sides, thus exposing mineral deposits. These deposits are likely to be richer and more numerous in the mountains than upon the plains. Mining, therefore, is often an important industry in highlands like the Rockies and the Andes.

Rapid mountain streams furnish much water power. This is often used to run mills or to generate electricity, which is trans-

mitted to cities or towns, where it is used for manufacturing, electric lighting, or running electric cars (Fig. 4). Italy, Switzerland, our Pacific states, and many other regions are using their water power in this way. The possession of water power is especially fortunate for countries which have neither coal nor petroleum.



Courtesy National City Bank, New York.

Fig. 20.—A comprehensive view of the port of Stockholm. Of what advantage is this fine harbor to the life of the Swedish people? How is this port an advantage to Great Britain and the United States?

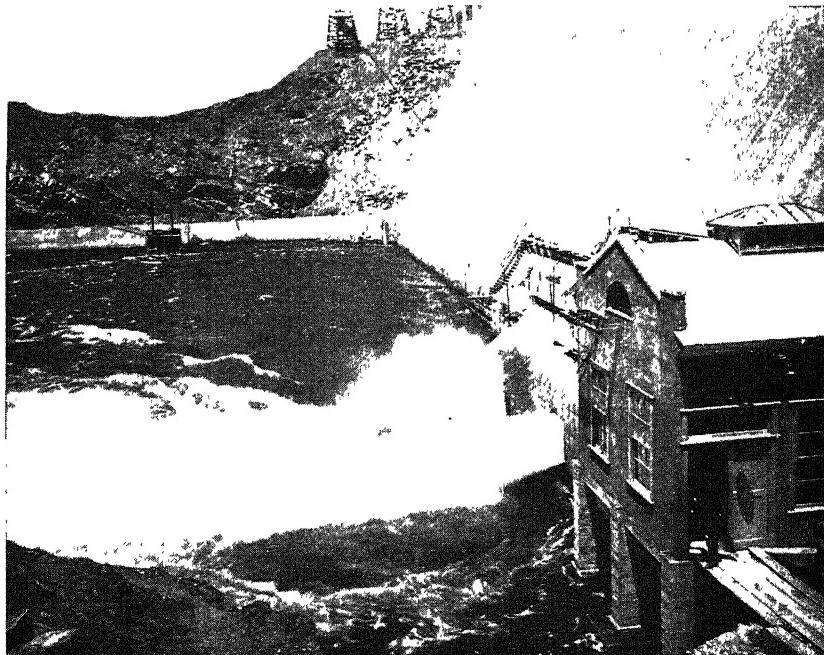
Mountains often form natural boundaries between nations, or barriers between different sections of the same country. Can you give examples of this? How do such barriers affect the progress of peoples?

People who live among mountains often have to work hard to make a living. Such conditions of life develop in the mountaineer habits of industry, economy, thrift, and independence. Such

fine people as the Swiss and Norwegians have been developed by the difficult conditions under which they have been obliged to live.

HARBORS AND RIVERS

Importance of harbors. Good harbors with deep water make it possible for large ships to come near the land in sheltered waters



Courtesy of Santa Fe R. R. Company.

Fig. 21.—A power house at the foot of Elephant Butte Dam in New Mexico, where great generators are run for the production of powerful currents of electricity.

where they can load and unload their cargoes in safety (Fig. 20). A country without such harbors is at a distinct disadvantage. Why? Doubtless the many excellent harbors of Great Britain and the United States have helped to give these countries their important commercial influence in the world.

Importance of rivers. Rivers that run over great plains are likely to be navigable for long distances. They furnish cheap transportation but cannot often be used for power. On the other

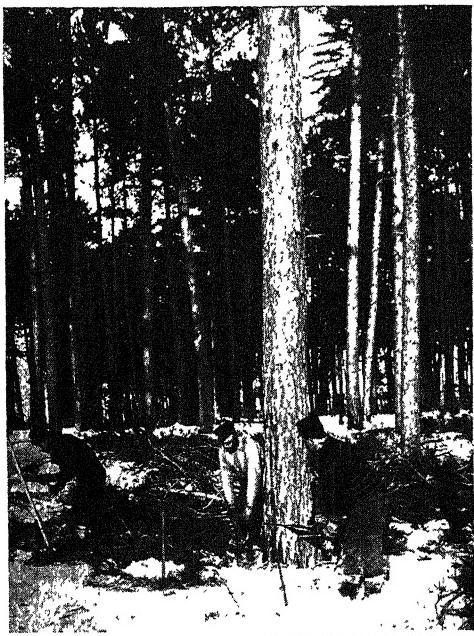
hand, rivers which flow down steep slopes have many falls and furnish much power (Fig. 21), but cannot be used for transportation. Navigable rivers help people to make their homes far inland where they may find good farming lands, establish towns, build up industries, and find cheap transportation for their goods. The navigable streams of Germany have helped greatly to build up her commerce; and the rapid streams of Italy furnish much power and have been an important factor in the growth of her industries.

OTHER NATURAL RESOURCES

Value of fisheries. Great numbers of fish live in the shallow waters bordering continents. Oysters, clams, crabs, lobsters, and shrimp abound along the shores in many localities. From the very earliest days these have been sought as articles of food. Man also uses fish to-day for the manufacture of fertilizers, oils, glue, and other products.

Fresh fish can now be carried for almost any distance in cold-storage steamers and refrigerator cars. In this way people living far from the ocean are able to enjoy fresh sea food at moderate prices.

Countries like Canada, the United States, and the nations of northwestern Europe have such excellent fishing grounds off their coasts that they are



Courtesy U. S. Forest Service.

Fig. 22.—These men are cutting lumber and firewood from their home forest. They like to use their winter days in this way because it will save their time in the busy summer.

able to provide great quantities of fish for their own use and to send large supplies to their less fortunate neighbors.

The fishing industry encourages shipbuilding and gives excellent training in seamanship. Many of the best sailors on American merchant ships have had their early training on fishing vessels.

Importance of forests. Wood is so useful to all men that it makes a great difference to any nation whether or not it has large forests. When one stops to think of all the uses that we make of wood, he can easily understand why forests are so important. What are some of these uses? As man has advanced in civilization, he has made greater and greater use of wood. He has cut down the forests so extensively that there is already a scarcity of lumber in many parts of the world (Fig. 22).

QUESTIONS AND PROBLEMS

1. Why are the most highly civilized nations located in temperate regions?
2. Rainfall in Europe is more evenly distributed than in North America. Account for this.
3. Upon what does the temperature of a given place depend? Upon what does its rainfall depend?
4. In what ways do mountains influence man's life?
5. How does it happen that every good harbor does not have a great city located upon its shores?
6. In what different ways do rivers influence human activities? Give examples.
7. How do the plains of our country influence the life of Great Britain?
8. Think of as many conditions as possible which determine the location of cities. Give examples.
9. Europe is replanting and caring for forests at large expense. Why are its forests of such great importance?
10. The largest use of fish is for food. In what other ways are they used?

SUGGESTED PROJECTS AND EXERCISES

1. Make a list of materials used in your home that are not produced in your locality because the climate is not suited to their production. How important are these to your comfort?
2. Make a list of ways in which man adapts himself to the change of seasons. Illustrate by a collection of pictures.
3. Make a collection of rocks in different stages of decay to show that soil comes in part from the decay of rocks.
4. Collect pictures of homes in different parts of the world to show how they are adapted to life in the country where they are located.

5. Make a collection of pictures to show occupations and modes of life:
(a) among mountains; (b) on plateaus; (c) on warm, moist plains; (d) on hot, wet plains; (e) on hot, dry plains.
6. Collect pictures showing different uses that man makes of rivers. Find illustrations of rivers having these uses.
7. Make a list of some of the most useful kinds of wood, the important uses to which each is put, and the region which supplies each kind.
8. Appoint a committee to study the work of the United States Bureau of Fisheries and to report upon the nature and value of its work.

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PART II
THE UNITED STATES

CHAPTER III

OUR RESOURCES: THE BASIS OF OUR PROSPERITY

Why we have different occupations in different parts of the country. As we study the geography of the United States, we find that in one part of the country agriculture is the leading occupation; in another part, manufacturing; and in still another part, mining and grazing. The reasons for these differences are, of course, the differences in resources of the several parts of the country. In this chapter we shall study briefly the physical conditions which help to determine the chief occupations in different parts of the United States.

We shall now consider each geographic division of the country with its characteristic life. These divisions are (1) Appalachian Highland, which may be divided into two parts: (a) New England and (b) that part of the highland south of New England; (2) the Atlantic and Gulf Coastal Plains; (3) the Interior Plains; (4) the Rocky Mountains and the Western Plateaus, and (5) the Pacific Highlands and Lowlands (Fig. 28).

NORTHERN DIVISION OF THE APPALACHIAN HIGHLAND: NEW ENGLAND

Glacial soil. The New England States are the northern division of the Appalachian region. Southeastern New England resembles the eastern part of the southern Appalachians, known as the Piedmont, in having a low, rolling surface. The soil, however, differs greatly from that of the Piedmont. New England's surface and soil have been changed by the great ice sheet (Fig. 23) which moved over the northern part of the United States thousands of years ago. Much of the New England soil is coarse and, in places, rocky. In parts there are many marshes and swamps (Fig. 24). Farming, therefore, except in the river valleys,

is not so profitable as in some other parts of the country. Dairying and truck farming, however, are carried on to meet the demands of the very dense population.

Water power. The ice sheet, besides changing the soil, dammed some of the rivers and turned others from their courses. This

made falls in the rivers, which have been used for many years to turn the wheels of mills and factories. The water power of New England has aided greatly in making this part of the country the important manufacturing region that it is. The chief manufactures are textiles, shoes, and metal products.

Occupations. Northern and western New England are much more rugged than the southeastern part. In these more rugged

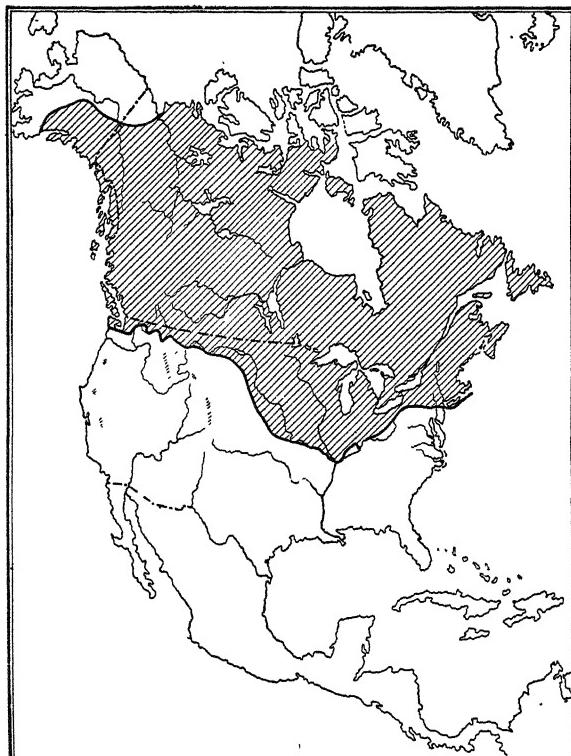


Fig. 23.—The shaded portion of the map shows the part of North America that was covered by the great ice sheet. What effect did the ice have upon the country over which it passed?

parts, with their sparse population (Fig. 25), the chief occupations are farming and lumbering. Small manufacturing cities and towns are located at many of the falls in the valleys of the highland. The large manufacturing and commercial cities are in the southeastern part of the region.

Minerals. The mineral products of the region are granite, limestone, marble, and slate. Many of the costly public buildings of the eastern part of the country have been made of granite quarried from the hills or along the coast of these states. Some of the quarries like those of Quincy, Massachusetts, and of the

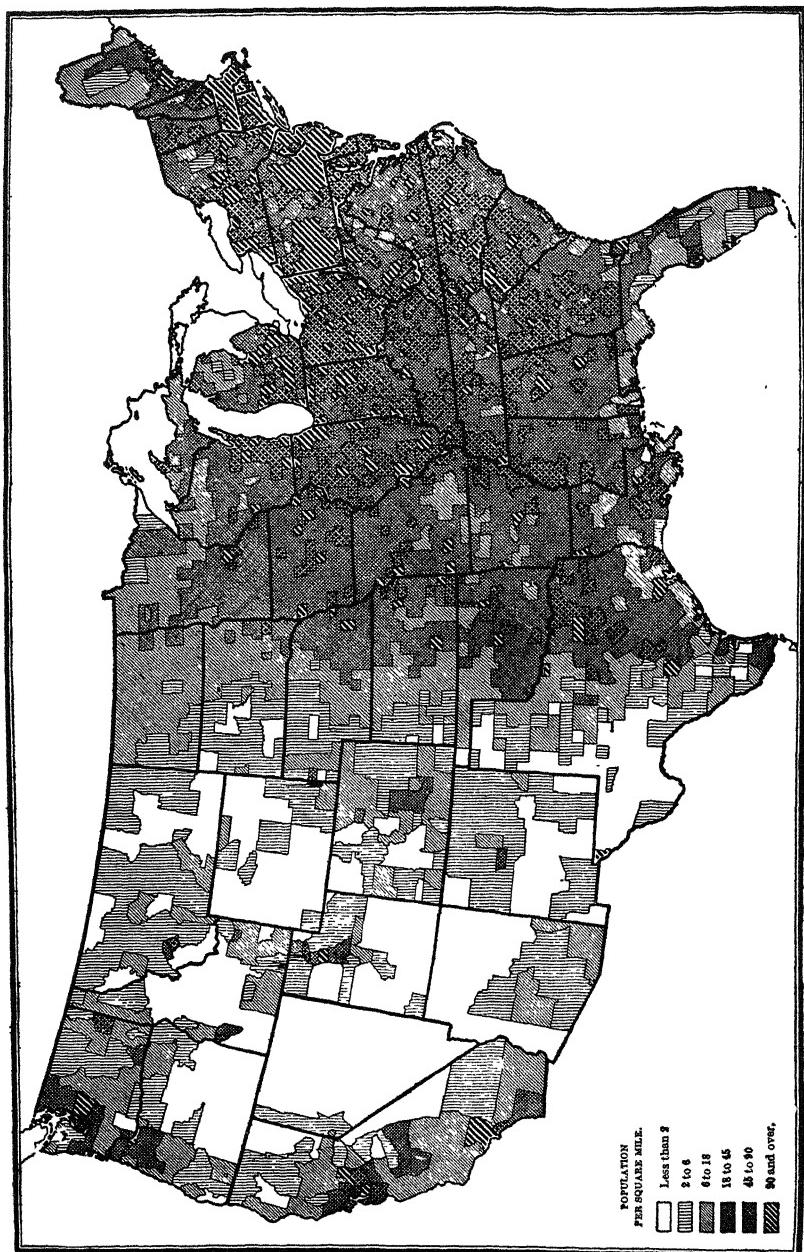


Courtesy American Agricultural Chemical Co.

Fig. 24.—Picking cranberries on Cape Cod. Cranberries are grown in reclaimed swamps or bogs formed by glacial action. Many of the bogs can be flooded with water when there is danger of frost.

islands of the Maine coast are located almost at the water's edge, where the heavy stone can be loaded readily on to ships.

Forests. The forests of the New England region for years supplied much lumber for the northeastern states. The forests occur in the more rugged parts of the states. Here the land, being unsuited for farming, has never been cleared, but has been allowed to remain wooded. Storms bring moisture from the Atlantic sufficient both for forests and for agriculture. Previous to 1860 much lumber was used in building ships, for which New



Courtesy U. S. Census Bureau.

Fig. 25.—Population per square mile by counties.

England was noted. As a result of years of lumbering the supply has been greatly reduced. These states now obtain much of their lumber from Canada, the southeastern states, and even from the Pacific states (Fig. 84).

Fishing. Fishing has long been one of the leading occupations of the region. The many excellent harbors, the abundance of fish not far from the shore, and the facilities for building vessels caused fishing even in earlier years to take a prominent place in New England activities.

Advantages for trade. The location of this region is also favorable for commerce. Like other states of the north Atlantic coast they lie in the route of trade between the Middle West and Europe. Therefore some of the goods passing between the Central Plains and Europe go through the ports of New England. The industries of the region itself require raw materials, many of which must be imported or brought from other parts of the country. Some of their manufactured products leave the ports of New England for other parts of the United States and for foreign countries. In this way the manufactures tend to increase the commerce of the ports. Boston, the metropolis of New England, leads all the other cities of New England in the value of its trade.

SOUTHERN DIVISION OF THE APPALACHIAN HIGHLAND

This region lies between the Atlantic Coastal Plain and the Great Central Plains. All parts of these highlands were formerly much higher than they are now, but weathering and erosion have worn them to lower levels.

The eastern portion, known as the Piedmont, has been worn almost to the level of the Coastal Plain which borders it. The crops raised (Fig. 26) are similar to those of corresponding parts of the Atlantic Plain. Because of the somewhat greater elevation the rivers flow more swiftly than those of the Coastal Plains. Falls occur in the rivers where they pass to the lower level and softer rocks of the plains. For this reason the boundary between the Piedmont and the Atlantic Plain is known as the Fall Line. Because of the excellent water power furnished by the falls both

along the Fall Line and on the Piedmont itself, important manufacturing cities have sprung up. Some of the cities on the Fall Line are Philadelphia, Baltimore, Washington, Richmond, Raleigh, Columbia, Augusta, and Macon.

Passes through the mountains. West of the Piedmont the Appalachian Highland is much higher and much more rugged



Courtesy American Agricultural Chemical Co.

Fig. 26.—Cotton field in Georgia. Much of the low rolling Piedmont has excellent soil. In the Southern states, cotton is the chief crop. One part of this field has been well fertilized while the other part has not, hence the difference in the amount of cotton from the two parts.

than the Piedmont. The rugged surface makes travel across the mountains so difficult that roads and railroads follow the river valleys. The passes from west to east through the northern part of the Appalachian Highland are much lower and therefore much easier than in the south. For this reason products from the

Middle West can be sent more readily to north Atlantic ports than to south Atlantic ports. This is one reason why the commercial cities of the north Atlantic coast are larger than those of the south Atlantic coast.

Agriculture. Some of the valleys lying between the mountain ridges are noted for their fertility. The crops raised are grains, vegetables, and fruits.

Forests. The Appalachians are also noted for their forests. Throughout a large part of the area the country is heavily forested. These forests have been of great use in meeting the needs of the densely settled parts of the eastern United States.

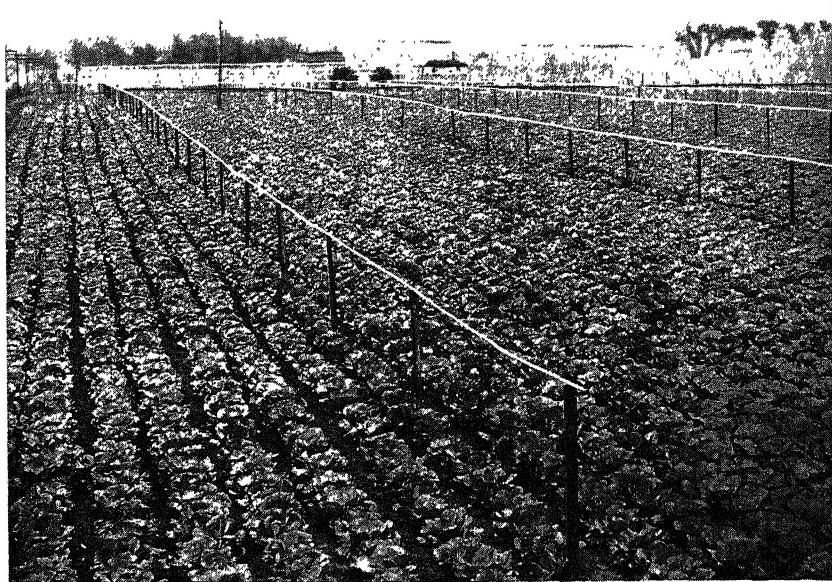
Minerals. The Appalachian Mountains are rich in minerals. Nearly all the anthracite or hard coal of the country is now mined in eastern Pennsylvania. Pennsylvania and West Virginia lead all other states in the production of bituminous, or soft, coal. Iron, petroleum, and natural gas are also valuable products of the region. The industries and commerce of the United States owe their growth, in large measure, to the mineral products of the Appalachian Highland.

ATLANTIC AND GULF COASTAL PLAINS

Extent. In the eastern and southeastern parts of the United States we find low, level land bordering the Atlantic and Gulf coasts. From New York City southward along the Atlantic coast this plain varies from 100 miles to 300 miles in width. The part bordering the Gulf of Mexico is much wider. These stretches of level land are known as the Atlantic Coastal Plain and the Gulf Coastal Plain. They were once a part of the sea bottom, but by the very slow uplift of the sea floor they were raised above the level of the sea and became a part of the land. We know this to be so because there are found in the rocks of the plain the remains of animals and plants which lived in the sea.

Agriculture. The Atlantic and Gulf Coastal Plains add enormously to the wealth and commerce of the country. The level land and rich soil of most parts of the Plains make farming a profitable occupation. Throughout the Atlantic Plain truck farming is extensively carried on to supply the many large cities

of the eastern part of the country. On the southern plains, where the climate is warm and the spring earlier than farther north, vegetables and fruits are raised (Fig. 27) and sent to the northern markets. The long, moist, warm summers of the South Atlantic and Gulf Plains make it possible to raise crops quite different from those of the northern plains. On the southern



Courtesy American Agricultural Chemical Co.

Fig. 27.—A field of cabbage on the Atlantic Coastal Plain. The many large cities in the northeastern part of the country obtain a large part of their fresh vegetables from the truck farms of the Piedmont and the coastal plain.

part of the Atlantic Plain cotton is a very important crop. The Gulf Plains and the southern part of the Atlantic Plain make up the greater part of the "cotton belt" of the United States. In this part of our country "Cotton is King." Other crops are raised in places especially favorable for them, as peanuts and tobacco in Virginia, subtropical fruits in Florida, sugar cane in Louisiana, and rice in Louisiana, Arkansas, and Texas.



Fig. 28



Fig. 28

Forests. The pine and cypress forests of the South Atlantic and Gulf Plains are of great value. Because they are near the coast, it is easy to ship lumber to other regions. In the days of wooden ships this region supplied much of the timber for vessels.

Minerals. Minerals found in these regions include phosphate rock, valuable for fertilizer, found in South Carolina and Florida; petroleum, which occurs in Arkansas, Louisiana, and Texas, and extends into the Great Plains (page 45) in Oklahoma; and sulphur, which is mined in districts in Louisiana and more extensively in Texas.

Commerce. Along the coast are some of the chief commercial cities of the country. New York City lies at the northern point of the Plain. South of New York are Philadelphia and Baltimore. Norfolk, Charleston, and Savannah are other commercial cities of importance. These cities have developed because much of the foreign trade of the regions west of the Atlantic Plain as well as the trade of the Plain itself passes through these ports. For the same reasons we find the commercial cities of New Orleans and Galveston on the Gulf Coast, while Houston, because of its deep waterway to the Gulf, enjoys similar advantages. In the large cities of the northern part of the Atlantic Plain manufacturing is a very important occupation.

THE INTERIOR PLAINS

Extent. Between the Appalachian Highland and the Rocky Mountains are great stretches of land which are comparatively level. We may think of this region as extending southward to the Gulf Plain and northward to the Canadian border. Within these limits there are of course areas more or less mountainous, such as the Ozark Plateau in southern Missouri and northern Arkansas and the Superior or Laurentian Upland in northern Wisconsin and Minnesota. The part of the plains lying east of the 100th meridian is known as the Central Plains, the Central Lowlands, or the Prairies, while the part west of the 100th meridian is called the Great Plains.

The Central Plains. This region is especially adapted to agriculture. East of the 100th meridian the rainfall (Fig. 29) is twenty

inches or more, so that it is not necessary to make use of irrigation or dry farming. It is on these plains that the great wheat and corn crops of the country are raised. The soils north of the Ohio and Missouri rivers are chiefly glacial, but they are much finer and richer than those of New England. On these soils it has been possible to raise crops year after year without returning any fertilizers to the land. This of course should not be done, as in time the soil becomes poor and unable to produce

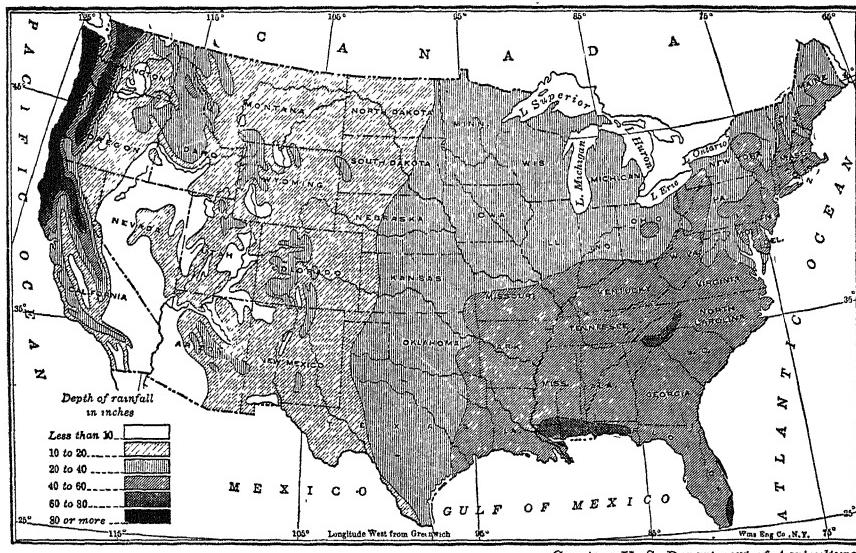


Fig. 29. — Annual rainfall in the United States.

a profitable crop. The corn and other grains raised here make excellent feed for cattle and hogs. For this reason many farmers are engaged in raising live stock and in dairying. The grains (Fig. 30) and animal products of this part of the country are among the most important exports of the United States.

Forests. The early settlers in Michigan, Minnesota, and Wisconsin found forests covering large parts of those states. As the Central Plains have been developed, the supply of timber, like that of the northeastern states, has been greatly reduced. The presence of the forests has aided the growth of important

industries, including the manufacture of furniture, carriages, and automobiles.

Minerals. Besides good soil and a favorable climate, this region has mineral resources of almost unlimited value. There are large deposits of bituminous coal in Illinois and Indiana, and in the Superior Upland to the north are iron mines from which



Courtesy American Agricultural Chemical Co.

Fig. 30.—One of the great grain fields of the prairie regions. Why is it possible for a few men to care for a large farm in a region like this?

the country obtains its largest supplies of iron ore (Fig. 31). In these same highlands is also one of the three great copper deposits of the United States. Petroleum and natural gas are valuable products in eastern and western sections of the Plains.

The Great Plains. West of the 100th meridian the land gradually increases in height to the foothills of the Rocky Mountains, where the land is more than a mile above the level of the sea. On the Great Plains the rainfall is less than twenty inches. All that part of the United States east of the Rocky Mountains re-

ceives rain from great eastward-moving storms known as *cyclones*. The winds of these storms bring moisture from the Atlantic and the Gulf of Mexico. These storms bring little rain to the Great Plains. Why? In nearly all parts of this region



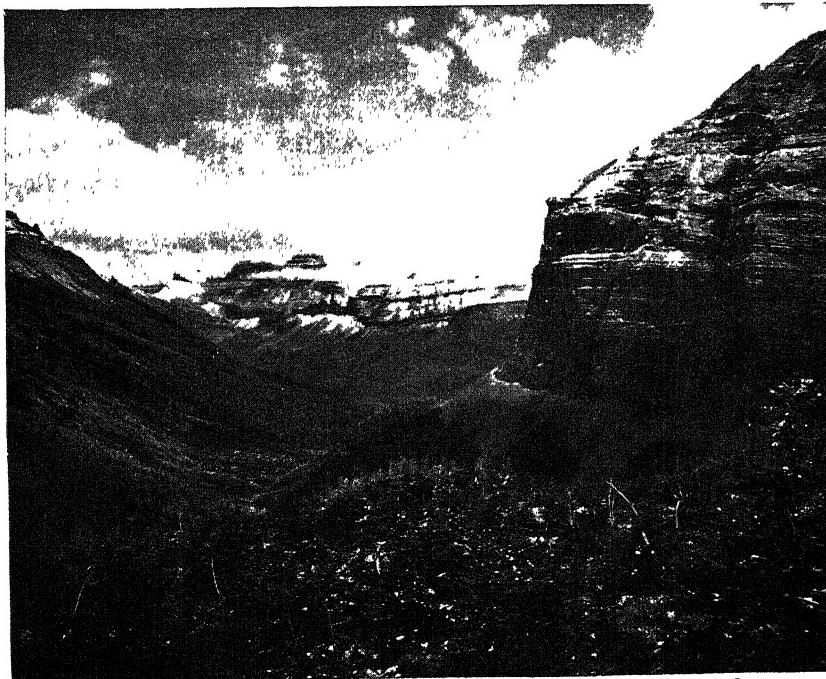
Courtesy U. S. Steel Corporation.

Fig 31.—Ore docks and smelting plant at Gary, Indiana. The smelting of iron and the manufacture of steel are among the chief industries of the Middle West. By supplying materials for railroads, steamships, and farm machinery, these great plants have made possible the rapid growth of agriculture and transportation throughout the region.

grazing is the chief occupation. Wherever farming is done, water must be supplied by irrigation, or dry farming methods must be used. The regions have excellent soil; and if the rainfall were sufficiently great, the crops would probably equal those of the plains farther east.

THE ROCKY MOUNTAINS AND THE WESTERN PLATEAUS

Characteristics. This region constitutes the most sparsely settled part of the United States. It differs from other sections in possessing the longest and widest mountain ranges of the country (Fig. 32) and in not having access to other countries by sea, lake, or navigable rivers. The states in which the Rocky Moun-



© Fred Kiser.

Fig. 32.—Valleys and peaks in Glacier National Park, one of the beautiful regions in the Rocky Mountains which has been set apart for the enjoyment of the American people.

tains and the western plateaus are situated are known as the Plateau states.

Let us study the physical features and resources of the region and thus find out why as a whole the region is thinly settled. As we study the physical map (Fig. 28) we notice that high mountain ranges cover large parts of Montana, Idaho, Wyoming, Colorado,

and Utah, as well as small parts of Arizona and New Mexico. Nevada has many smaller ranges. Between the northern Rockies and the Cascade Mountains lies the Columbia Plateau, with its rich soil of decayed lava. West of the southern Rockies is the Colorado Plateau, through which flows the Colorado River, in its wonderful canyon the bottom of which is 5000 feet below the level of the Plateau. Between these two plateaus lies a region whose streams never reach the ocean. Instead, they flow into salt lakes or disappear on the arid plains. This area of interior drainage is known as the Great Basin.

Rainfall. The plateaus and the Great Basin are not only high and, in parts, rugged, but the entire region, except in a few places where there are high mountains, has a very slight rainfall. The reason for this is that the winds from the Pacific in blowing over the mountains of the Pacific states lose much of their moisture. Moreover, after passing the mountains, the winds sink to lower levels and are, therefore, not cooled enough to cause much precipitation until the Rocky Mountains are reached. Here open forests of considerable extent occur. The slight rainfall and rugged surface of much of the region are the causes of the sparse population of this whole area.

Grazing. Grazing is an important occupation of the Plateau states. The number of sheep greatly exceeds the number of cattle. The cooler climate of the highlands and the rugged pastures over which the animals must climb make the regions better adapted to sheep than to cattle. Wool and hides are sent in large quantities to the mills and tanneries of the Eastern states.

Minerals. In the Rocky Mountains and in parts of the plateaus there are valuable mineral deposits. Arizona, Montana, and Utah are noted for copper, gold, and silver. Lead and zinc are also produced in many of the states of this mountainous region. Coal is mined in Colorado, Wyoming, Montana, Utah, and New Mexico. Wyoming is the chief petroleum-producing state of the region. The section is one of the richest mining regions of the world.

Trade routes. Scenery. Not least among the resources of

the Rocky Mountains and western plateaus is their beautiful scenery. Yellowstone Park, Glacier National Park, the Grand Canyon of the Colorado, and many other places are visited every year by thousands of tourists.

The mountainous surface of much of the Plateau states makes travel and transportation difficult. Before the days of transcontinental railroads a journey from the Great Plains to the Pacific coast was very long and wearisome. The Rocky Mountain region is crossed by railroads at the north across Montana and Idaho, at the central part through Colorado, Utah, and Wyoming, and in the south through Arizona and New Mexico. One may journey over any of these routes by rail as comfortably as in any other part of the country, enjoying delightful scenery.

THE PACIFIC HIGHLANDS AND LOWLANDS

Characteristics. The characteristic features of the surface of this region are two great mountain chains extending from north to south throughout the entire length of the Pacific states — the Sierra Nevada Mountains and the Cascade Ranges in the east, and the Coast Ranges in the west. Between these ranges are long and comparatively narrow valleys. These and a few other valleys of less extent contain the larger part of the population of the Pacific states.

Agriculture. Agriculture is carried on in the great valleys lying between the eastern and western ranges. The soil of the valleys has been brought by rivers from the mountains and spread out over the floors of the valleys. The valley which occupies the central part of California is known as the Great Valley of California. This alone is half as large as the state of Ohio. Besides this there are the smaller valleys of southern California, and at the north, a part of the valley of the Columbia River and the broad valley south of Puget Sound. Thus we see that there are large areas in which farming can be carried on extensively.

The crops of the valleys of Washington, Oregon, and northern California differ from those of southern California because of differences in climate. In the warmer climate of southern and central California, oranges, lemons, grapefruit, grapes, figs, almonds,

walnuts, dates, and olives are raised. The fruits of the northern region are apples, pears, peaches, plums, and small fruits. We shall learn more of the crops raised in these states in later chapters on fruits and grains.

Rainfall. Not only do the northern and southern regions differ in temperature, but there are also great differences in rainfall. Washington, Oregon, and northern California west of the Sierra Nevada and Cascade Mountains have rainfall enough so that farming can be carried on by the usual methods, but in nearly all parts of California except the northern part, irrigation must be used to supply the crops with sufficient moisture.

Washington and Oregon have greater rainfall in their western parts because the mountain ranges of this region cool the westerly winds which bring moisture from the ocean. East of the Cascade Mountains, however, the rainfall is much less, so that crops are raised by irrigation and dry farming.

Use of mountain streams. Water from the mountain streams is used to irrigate the fields and fruit orchards of the plains. Besides supplying water for irrigation, these streams supply hydro-electric power which is carried hundreds of miles from the mountains to the large cities where it is used for lighting and for heat and power. Water is also piped from the mountains hundreds of miles to furnish the water supply for the large cities (Fig. 33).

Minerals. It was the discovery of gold in California in 1848 that led to the rapid settlement of these states. With the exception of a few years, California has led all the other states in the production of gold from the date of discovery to the present time. The value of the yearly output of the gold mined in this state alone is in excess of \$17,000,000. California also leads all the other states in the production of mercury, or quicksilver.

Oregon and Washington, as well as California, produce gold, silver, copper, and lead. Large smelters in Washington besides treating ores produced in the locality also smelt ores brought from distant mines, some coming from Alaska, some from South America, and some from Asia. California at times has led the country in the production of petroleum.

Forests. The plentiful supply of rain in the northwestern part of the Pacific states is largely responsible for their great forests of valuable timber which constitutes one of the chief exports of the commercial cities. One county of Oregon is said to contain more standing timber than any other area of equal size in the United States.



Courtesy Los Angeles Chamber of Commerce.

Fig. 33.—The aqueduct which carries water to the city of Los Angeles. The water is brought from mountains 250 miles away. In some parts of our country all water pipes must be underground. Why?

Fish. Another of the great resources of the region is the abundant supply of salmon in the rivers and of tuna, halibut, and other fish in the ocean. Canned salmon is sent from Pacific ports to all parts of the United States and to the countries of Europe. Halibut and salmon are sent in fresh condition even to the cities on the Atlantic coast.

Commerce of the Pacific coast. The commerce of the Pacific coast is of great value. The Pacific ports are well situated to carry on trade with western Canada, Alaska, the countries of Asia, the western coast of South America, and by way of the Panama Canal with the eastern part of the United States and the countries of Europe. While the countries of Asia are not highly developed commercially as are the countries of Europe, yet the prospects for the future are very bright. Japan has made rapid strides in the last twenty-five years, and China is now being developed. The future trade between these countries and the United States is sure to be large. Far-sighted business men believe that when the great resources of China and other countries of the Far East are fully developed the commerce of the Pacific may equal or even exceed the commerce of the Atlantic Ocean. No part of our country is so well situated to receive this trade as the Pacific coast. As there are few harbors along this coast, the cities now located on them are almost sure to have their commerce greatly increased.

Dry farming. In every state of our country west of the 100th meridian there are areas with excellent soil that would yield abundant crops if only there were sufficient rainfall. How to make farming pay in these regions of light rainfall has been one of the great problems of these western states. It has been found that over large areas crops can be raised by the method known as *dry farming*. Dry farming consists in making the best possible use of all the moisture there is in the soil. This is done in several ways. The ground is thoroughly cultivated so that the rain water will sink into the earth instead of running off on the surface. Thorough cultivation also forms what is called a dust mulch and prevents water in the soil from rising to the surface and being lost by evaporation.

Farmers in these regions of light rainfall raise, so far as possible, crops which do well with a small amount of moisture. One of these crops is alfalfa, which sends its roots to a great depth where there is more moisture than is found nearer the surface. Certain kinds of wheat have been found to do well in dry climates and have been brought here from other countries. Kafir corn and

some kinds of beans also do well. Another way frequently made use of by the farmers is to plant a crop only once in two years or even once in three years. This is necessary in places where the rainfall of one year does not give enough moisture to raise a crop.

Irrigation. Irrigation is another method used in many parts of the Pacific and the Plateau states. Besides irrigation projects

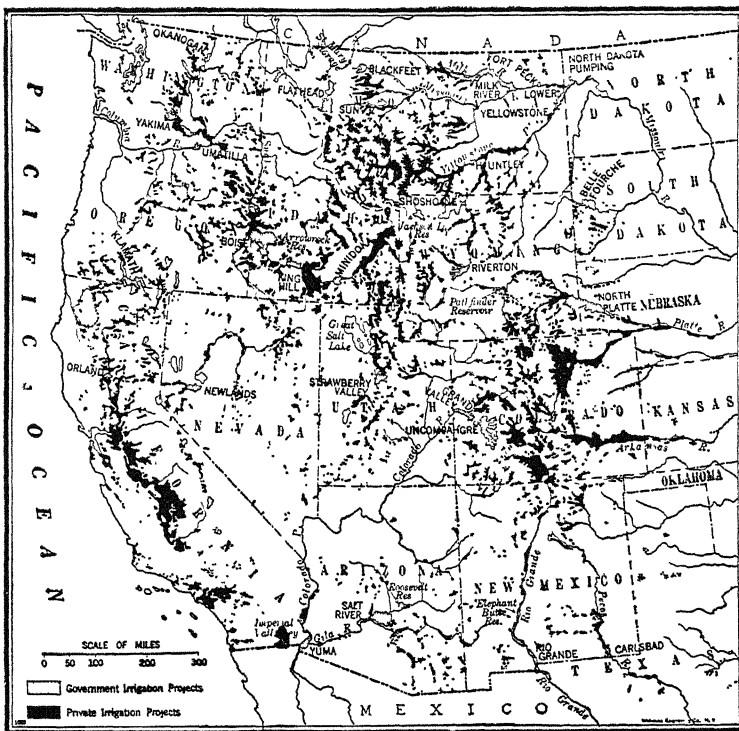


Fig. 34. — Irrigated areas in the West.

developed by individuals and corporations, there are many projects undertaken by the United States Government. Look at the map (Fig. 34) and note how widely over these states the government irrigation projects are scattered. Most of the government projects vary in size from 100,000 to 250,000 acres.

As a result of irrigation many thousand acres of land that were desert or nearly so have been made to yield abundant crops

(Figs. 35 and 36). Some of the crops raised in the northern projects are apples, peaches, alfalfa, potatoes, and sugar beets. In the southern projects alfalfa, rice, oranges, lemons, cotton, and olives are raised. Some of the formerly worthless desert land now covered with bearing fruit trees is worth as much as \$1500 per acre.

Great engineering feats have been performed in developing some of the government projects. Some of the dams are larger



Courtesy U. S. Reclamation Service.

Fig. 35.—A desert in southern Idaho before the land was irrigated. The ground is covered with sage brush and other plants of little use to man.

than the Assuan dam of Egypt. In irrigating the Uncompahgre project of Colorado, a stream is carried through a tunnel under mountains for nearly six miles to water the lands of a valley on the other side. By means of irrigation and dry farming there have been added to the productive lands of the country many thousands of square miles. In this way the country has gained as much as if several new states were added to the United States.

Doubtless you are asking why all of the desert land is not irrigated if some of it can be made so valuable. It is because it is possible to irrigate only a very small part of our arid lands. In these dry regions there are few rivers or other sources of water. Sometimes the rivers run in canyons so deep that it would be altogether too expensive to pump the water to the



Courtesy U. S. Reclamation Service.

Fig. 36.—The same region shown in Figure 35, after irrigation. Now the land is yielding wheat and other crops to the prosperous farmers who have built homes here, as on similar projects in many portions of the arid West.

level of the farm lands. Moreover, the land must have the right slope so that the water can be made to run over it in such a way as to water the crops.

QUESTIONS AND PROBLEMS

1. Many more people live east of the 100th meridian than west of it. How do you account for this?
2. There are more large cities in the North Atlantic states than in the South Atlantic and Gulf states. Why?

3. Why are there not more large cities on the western coast?
4. Why should the people of the Great Central Plains have an interest in the commerce of the Atlantic states?
5. Why have Illinois and Ohio many railroads and Wyoming not so many?
6. Why does a strike of the coal miners of Pennsylvania cause anxiety in Chicago?
7. Ohio is now an important manufacturing state; in early days it was only agricultural. Account for this.
8. What exchange of goods would you expect between New Orleans and Chicago?
9. What industries of the East are influenced by the products of the Plateau states?
10. New York and Philadelphia can have green peas and beans in winter. How is this possible?
11. What exchange of goods would be likely to take place between Florida and Minnesota?
12. What conditions have made possible: (1) the growing of oranges in California and Florida? (2) the raisin industry in California but not in Florida? (3) the growing of peaches in Georgia? (4) the growing of spring wheat in Minnesota? (5) iron manufacturing in Pennsylvania?
13. Account for the dry summers in California.
14. It costs great sums of money to irrigate lands in the West. Who furnishes the money? How?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the United States draw the boundaries of the geographic regions. In each region print the names of its chief resources and principal industrial and commercial centers.
2. Make a collection of pictures showing the characteristic features and activities of each region.
3. How would a failure of crops in the Middle West affect the people of New York and Pennsylvania?
4. If the European corn borer should make further growth of corn in America impossible, how would this influence the people of Great Britain? Of New England? Of the Middle West?

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CHAPTER IV

GROWTH IN POPULATION AND TRADE

THE AMERICAN PEOPLE

The people and the country's welfare. Nothing can be of more importance to a country than the character of its people. Upon them depends its influence among other nations as well as its progress in industry and commerce. The millions of people of our American nation are the descendants of the people who left their homes in the Old World to find new life and freedom in this country. Let us see what the different races coming to America have done to establish its government and ideals and to increase its prosperity.

The people of the original thirteen colonies from which our nation was afterward developed were drawn largely from the British Isles. In the Middle Colonies, however, not all the people were British. In New York there were many Dutch and French Huguenots; in Pennsylvania there were Germans and Swedes, as well as the English Quakers. Farther south there were Germans and Swiss.

What the early settlers did for our country. The remarkable development of our country is due in large part to the many devout, industrious, and thrifty people who first settled here. Most of them were men and women of strong character who thought more of doing right themselves and of training their children properly than they did of gaining wealth (Fig. 37). That they might carry out their high purposes, they left their homes and friends to live in a wilderness across the Atlantic where the conditions of life were very hard. We owe much to their sacrifices. Their high ideals, passed on from generation to generation, have done much to make this land of ours one of the best places in the world in which to live.

What the later immigrants have done for America. The democratic government founded in the early days of our country has made our land a refuge for immigrants from many parts of the world, especially from the countries of Europe. Within the last thirty years other European countries have sent to us larger numbers of immigrants than the British Isles (Fig. 38). In recent years millions of people have come to our shores from Italy,

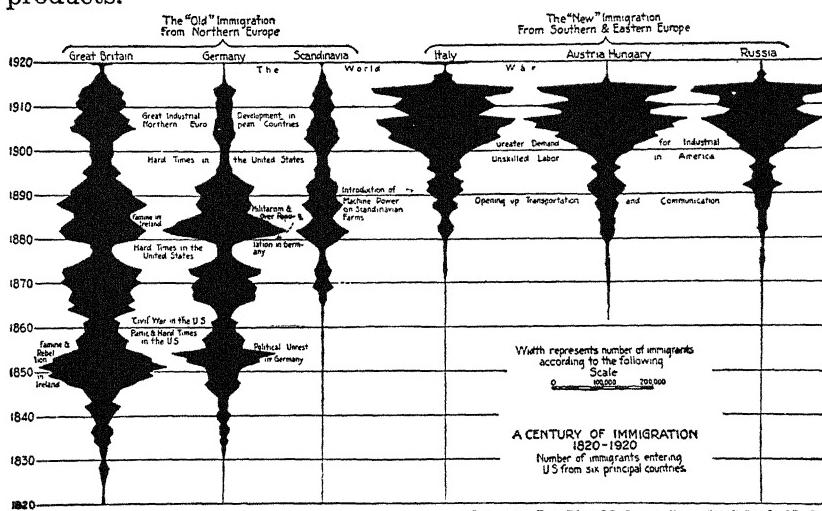


Photo by Edmund W. Sinnott.

Fig. 37.—Our fathers believed in freedom of worship, democracy in government, and education for all citizens. They early provided the church, town hall, and school building. Here we see the three buildings, side by side in an old New England town, each still in use for its original purpose. The grouping of these buildings was a custom very common throughout New England.

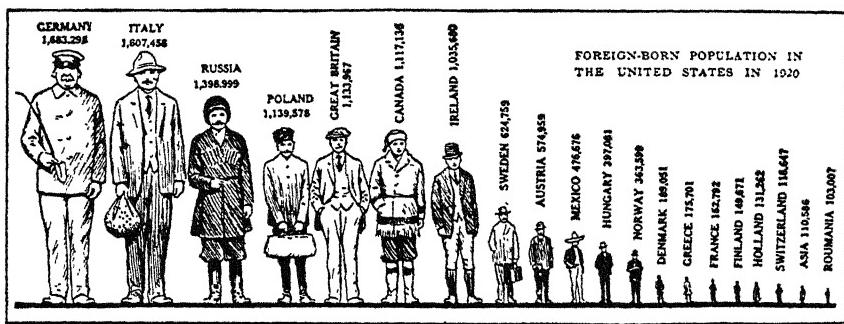
Greece, Austria, Hungary, Russia, Germany, and Sweden (Fig. 39). All these newcomers have aided in the development of our country. The Germans and Swedes have helped in developing the agriculture and manufacturing of the Middle West. The Russians have supplied the labor for our mines, for our steel plants, and for other industries. Italians have become musicians, workers in marble, market gardeners, fruit dealers, and laborers in many industries. Jews from all parts of Europe have come to America in large numbers. They have become manufacturers

of clothing, bankers, and merchants dealing in a great variety of products.



Courtesy Dr. Harold Rugg, Lincoln School, N. Y.

What opportunities are now offered to immigrants? Each race or nationality gives its share toward the growth and prosperity of our great country. In turn, every person coming to Amer-



Courtesy "Literary Digest," New York.

ica shares in its wealth and in the freedom and opportunity which the early settlers won for all (Fig. 40).

Here every one has the same chance for employment and for promotion. The same opportunities for education are open to

rich and poor alike. The children of the poor often become the most influential citizens. The bank clerk may become the president of the bank, the mill hand may become the mill owner, the railroad employee may become the president of the road, and any citizen may be elected to important public office. We must not forget that one's work and influence are important even if one



© Underwood and Underwood.

Fig. 40.—Immigrants from southern Europe landing at New York. What opportunities does America offer these people which they did not have at home? In what kinds of work will they probably engage?

does not reach a high position. The success of the factory or railroad depends upon faithful and capable workers quite as much as it does upon the officials of the company. Likewise the kind of government a country has depends quite as much upon the voters as upon the people who are chosen to hold office. Is it not the duty, then, of everyone, newcomers and native Americans alike, to help make our country the very best place in which to live?

By so doing we shall pass on to others all the advantages which our forefathers won for us.

THE GROWTH OF AMERICAN TRADE

Northern colonies. Soon after the settlement of the colonies, ships began carrying furs and tobacco to England and fish to the countries of southern Europe. The articles that they received from Europe were manufactured products which the colonists were at first unable to make for themselves (Fig. 41). This was not because they did not know how to make them but because they did not have the means for manufacturing.

Southern colonies. The Southern colonies were more dependent upon the countries of Europe than were those in the North. In Virginia tobacco was about the only product of the labor of the people. Tobacco found a ready market in Europe. For this reason the colonists gave their attention almost entirely to the cultivation of this crop. In return they obtained from Europe nearly all the necessities of life. Some of their food, however, was secured by trading with the Indians. Indeed, they were sometimes foolish enough to sell the Indians firearms that they might have enough food. The rulers of the Virginia colony saw that it was not wise to be too dependent upon others for the necessities of life, so they required each man to plant a certain amount

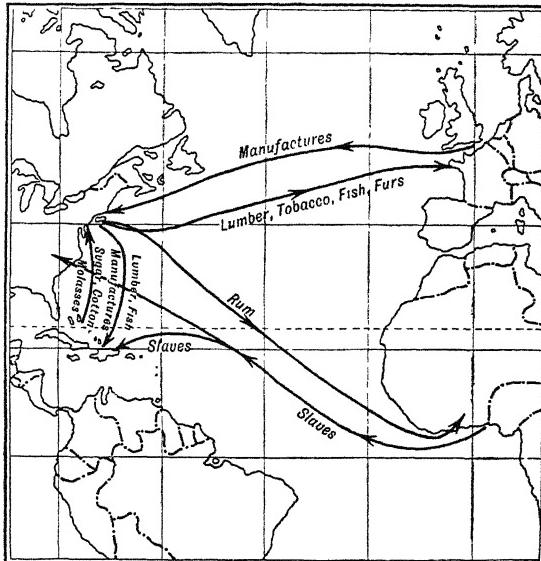


Fig. 41.—The chief trade routes and the leading exports and imports of early colonial days.

of grain before permitting him to raise tobacco for export to Europe.

Reasons for early trade. It is not surprising that even the early trade of our country was very largely confined to the countries of Europe from which these colonists had come. It was only from those countries that they could obtain articles to which they had been accustomed. The colonists also knew what those countries had to sell and what they wished to buy. Moreover, the ships that were constantly bringing over new settlers could readily carry goods in both directions. At this time routes to other continents were not well known; consequently voyages to those lands were more dangerous than those directly across the Atlantic.

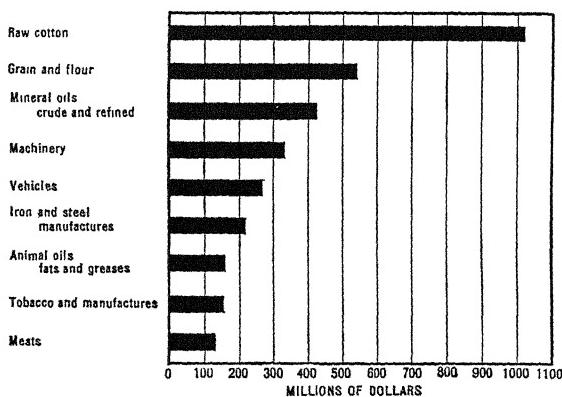


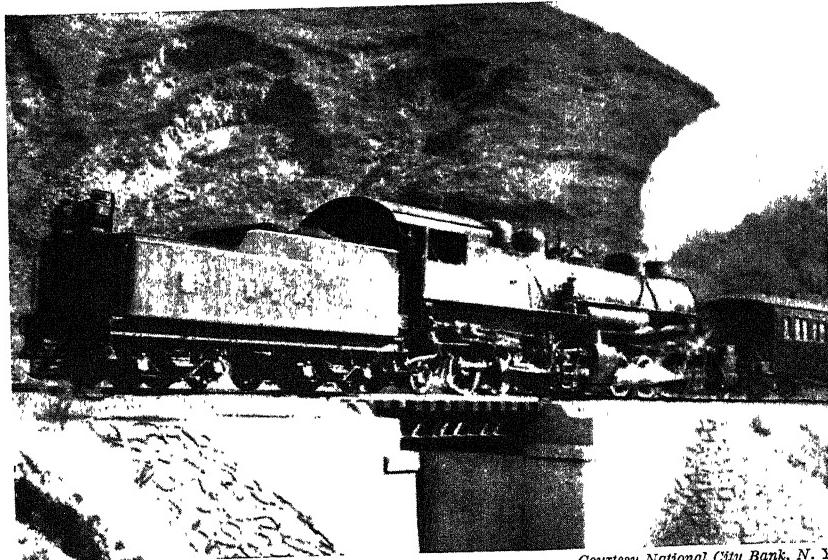
Fig. 42.—This graph shows the chief exports of the United States by articles in the order of their value. 1924-25.

Early trade profitable. The traders of America were not the only ones to profit by this exchange. Merchants of England found it even more profitable.

Fearing that other countries might secure a part of the trade with the colonies, they caused laws to be passed by the English Parliament which made it very difficult for the colonists to trade with any country besides Great Britain. There were, therefore, several reasons for the close trade relations existing between the colonies, which later became the United States, and the countries of Europe. Even down to the present time our trade with Europe has been greater than that with any other continent.

Why our trade with Europe is still large. Europe looks to us for a part of her food and for much of the raw materials for her mills. She may well do this, for the resources of our country are perhaps greater than those of any other. For a single country

our area is very large. The state of Texas alone is larger than any country of Europe except Russia. We have very large areas in which the conditions are favorable for the production of wheat, corn, cattle, and hogs. Our coal, iron, and copper mines are among the most productive in the world. Because of these resources, we have been able to export to Europe and to other continents many of the products which they require (Fig. 42).



Courtesy National City Bank, N. Y.

Fig. 43. — The locomotive, cars, and rails of this Chinese railroad were all supplied by manufacturing plants of the United States. American railroad equipment is well known all over the world.

Upon what do the trade relations of a country depend? The trade relations of a country depend very largely upon its resources and its industries. Let us think for a moment of Argentina. This is a country with broad, rich plains and with a climate suitable for raising wheat, corn, cattle, and sheep. Unfortunately, the country has practically no coal or iron. We may be sure that a country with such resources as these must export foods and raw materials and import a very large part of its manufactured goods. Unlike Argentina, England has small agricultural areas and poor

soils, but it has good supplies of coal and iron. For these reasons manufacturing has developed on a large scale while farming is of much less importance. England exports large quantities of manufactured goods and imports much of its food and raw materials. Thus we see that we must know a country's resources and industries before we can understand its trade relations.



Courtesy Goodyear Tire and Rubber Co.

Fig. 44. — Making automobile tires at Akron, Ohio, in one of the largest plants in the country. The rubber for this industry comes mainly from British India, the Malay Peninsula, and Brazil. The United States uses a very large part of all the rubber produced in the world.

The commerce of our country with European countries is in some respects very much like the commerce of Argentina since it consists of the exportation of foods and raw materials and the importation of manufactured goods. This trade of ours is due to the development of the great agricultural resources of the United States. But we also have extensive deposits of coal and iron. These deposits have led to manufacturing on a large scale. In

this respect we must, like England, import raw materials and find a market for our manufactures in all parts of the world (Fig. 43). We now need to import wool, hides, rubber (Fig. 44), and other raw materials for our factories. These factories turn out textiles, shoes, agricultural implements, machinery, typewriters, and countless other products which find a market in nearly every corner of the world. We have a great variety of resources and our industries are of all kinds. Therefore we need the products of all parts of the world, and our many products are desired by the people of all countries.

In later chapters we shall study the resources and industries of our country that we may gain a knowledge of its trade relations with the rest of the world.

QUESTIONS AND PROBLEMS

1. Why did the early settlers come to America?
2. How is the influence of those early settlers felt to-day?
3. For what reasons have immigrants come to this country in later years?
4. Why have not more of the immigrants of later years gone to the southern states to make their homes?
5. Why was the early trade of our country for the most part with Great Britain?
6. What was the nature of this trade? Why?
7. How did Great Britain try to prevent all manufacturing by the colonies?
8. For what reasons were the southern colonies more dependent upon others than the northern colonies?
9. Why did farming become the chief occupation in the South and not in the North?
10. What conditions in the North caused commerce to be more profitable than farming?
11. With what nations of Europe does the United States carry on most of its trade to-day?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of Europe draw red horizontal lines through the countries which sent the largest number of immigrants to the United States before 1870 and blue vertical lines through the countries which have sent the largest numbers since 1870.
2. On an outline map of the world trace the routes that ships take in carrying foods and raw materials from the ports of the United States to the ports of Europe.

3. Make a list of the countries whose exports and imports are similar to those of Argentina. How do the industries of these countries compare? Why?

4. Make a list of the countries whose exports and imports are similar to those of Great Britain. How do the industries of these countries compare? Why?

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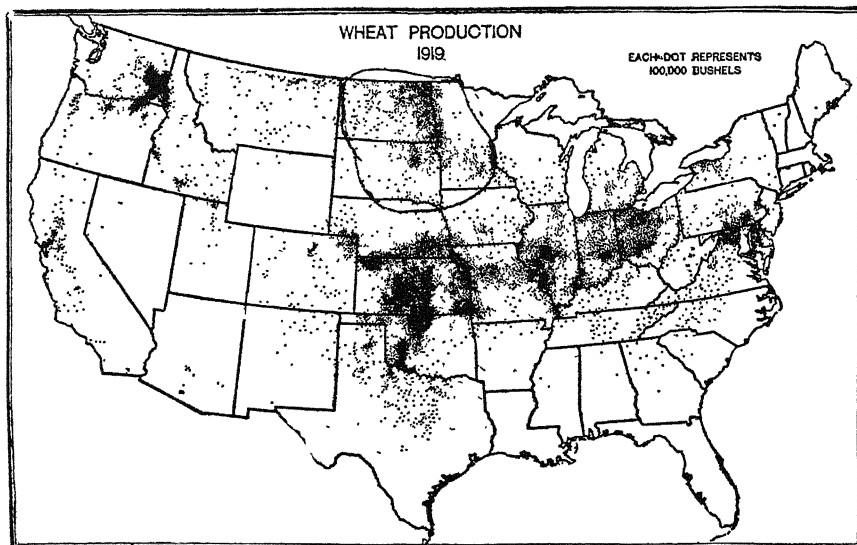
CHAPTER V

WHEAT AND CORN TO SPARE

Why we produce much grain. Lying between the Appalachian Mountains on the east and the Rocky Mountains on the west are extensive plains (Fig. 28). The part of these plains lying east of the one-hundredth meridian is known as the Central Plains, the Central Lowlands, or the Prairies, while the part west of the one-hundredth meridian is called the Great Plains. The Central Plains or Prairies are especially adapted to farming. Here the conditions are very favorable (Fig. 29) for the production of wheat, corn, cattle, and hogs. If you were to travel through this great farming country, you would find different crops raised and different methods of farming used. In some places you would find nothing but wheat; in others, chiefly great herds of cattle; in still another portion of the region you would visit farms on which both wheat and corn are important crops and where cattle and hogs are also raised in large numbers.

Different methods of farming. Let us see why the farmers in different parts of this region find it best to manage their farms so differently. Let us first think of those farms which produce the great quantities of wheat needed for food by more than one hundred million people of our own country and by the workers of Europe, to whom we send hundreds of thousands of bushels. Consult Figures 45 and 46 for wheat and corn and notice carefully the areas in which the largest crops of each are raised. You will notice that, east of the Rockies, there are two regions in which wheat is a very important crop. One of these regions lies in the northern part of the United States. What states does it include? This region also extends northward into Canada. Into what provinces of Canada? Another wheat region is farther south. What are the leading states of this region?

If we were to visit these regions, we should find the methods of raising wheat quite different. In the southern region the farmers plant or sow the wheat in the early autumn; in the northern region the farmers plant their wheat in the spring. In the northern areas the winters are very cold. If wheat were planted in the fall, it would be killed by the cold of winter. In the southern area the winters are not so cold, and the summers are hot and dry. If the wheat is planted in the autumn, the young plants grow

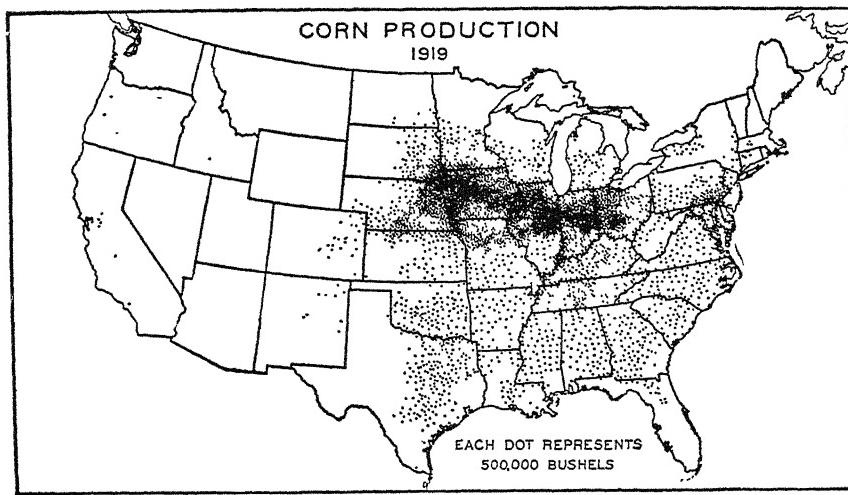


Courtesy U. S. Department of Agriculture.

Fig. 45.—The wheat-growing areas of the United States. The irregular line in North and South Dakota and Minnesota incloses the chief spring wheat region of the country.

much better than they do in the hot, dry air of summer. The wheat in the southern area grows to the height of a few inches in the autumn, then rests or remains dormant through the cold winter, but begins growing again very early in the spring. Wheat planted in the autumn and harvested the following summer, as in the southern area, is known as *winter wheat*. That of the northern area, which is planted in the spring and harvested in late summer, is known as *spring wheat*. What are the advantages in having both spring and winter wheat?

The corn-growing area. Look at Figure 46 and name the states which produce the most corn. What kind of wheat is also raised in about the same region? Great fields of corn are grown in this part of the country because it requires the long, hot summers of this region (Fig. 47). The summers of the spring-wheat region are not long enough or hot enough to give the best results with corn. Our maps show that the great quantities of wheat and corn produced in this country are raised largely on the Cen-



Courtesy U. S. Department of Agriculture

Fig. 46.—The corn-growing areas of the United States.

tral Plains or Prairies of the United States. You will be interested to know why this is so.

Why large crops are raised. One reason for the large crops of the Prairies is the fine, deep soil of this region. The level surface of the Prairies is another reason why large crops are raised there. The level land free from stones makes possible the use of large machines which could not be used in the rocky or hilly regions of New England. For instance, when the land is plowed, the work can be done more quickly on the level plains than where the land is hilly or rocky. On the prairies large *gang plows* are used, which turn many furrows at once. These plows are drawn

by several teams of horses, by gasoline tractors, or by steam engines. Often harrows are attached behind so that the land is plowed and harrowed at the same time. After the land has been plowed and harrowed, it is ready for seed. Here again the level land makes it possible for a few men to plant the seed rapidly and at small cost with machinery.



Courtesy Chicago, Milwaukee, and St. Paul R.R.

Fig. 47. — Part of a cornfield of one of the prosperous farms of the corn belt. Without this great crop it would be impossible for us to produce the quantities of beef, pork, and dairy products now consumed in this country or exported to Europe.

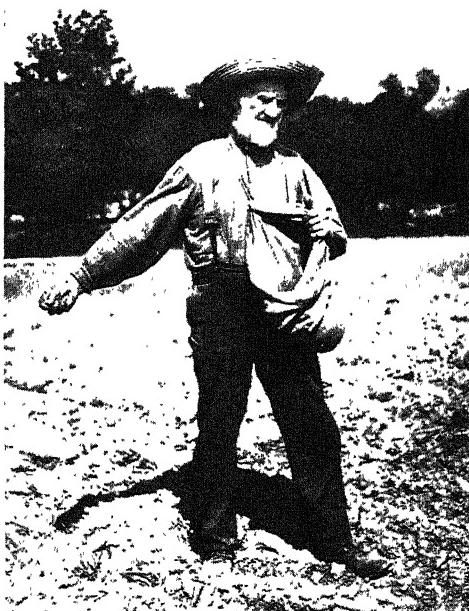
Wheat raising in the Pacific states. Although the leading wheat-producing states of the country are in the Middle West, large quantities of both spring and winter wheat are raised in the Pacific states. About one-tenth of our entire crop is raised in Washington, Oregon, and California. Many centuries ago great floods of lava poured from cracks in the earth and covered all the eastern parts of Oregon and Washington, a little of northern California, and parts of Idaho. This lava hardened and after many years decayed and formed fine, rich soil over large areas.

On this soil, wherever there is enough rainfall (Fig. 29) or where water is to be had for irrigation, good crops can be raised year after year with little or no fertilizer.

Millions of bushels of wheat and many thousand barrels of flour are exported from Seattle and Portland. Smaller quantities go from San Francisco and Tacoma. A great deal of the grain exported from the ports of the Pacific coast is sent to Japan. Much of the rest is shipped through the Panama Canal to the countries of Europe.

How wheat and corn are raised. Wheat and corn are cultivated quite differently. Wheat is now planted by machines, called *drills*, in rows eight or nine inches apart, instead of scattering it by hand as our forefathers did (Fig. 48). As growth takes place, the ground is covered by a carpet of plants, and no further work is necessary until harvest. Corn is planted in rows three or four feet apart.

Unlike wheat, the corn requires frequent stirring of the soil between the rows until the plant is half grown. This work is done by horse-drawn machines, called *cultivators*, which are run between the rows. This makes it possible for one man to care for many times as much land as he could care for with hand tools.



Courtesy of the International Harvester Co.

Fig. 48.—This is the way the farmer sowed his wheat before machines were invented for doing the work. Even to-day grain or grass seed is planted on small fields by hand. It would be almost impossible to plant in this way the many thousand acres on which wheat is now raised in this country.

How wheat and corn are harvested. Wheat and corn require quite different treatment in harvesting. Wheat is harvested by large machines, known as *binders*, which cut the grain and tie it into bundles; or if the grain is thoroughly dried, the combined harvester and thresher may be used. The harvester and thresher not only cuts the wheat but separates the grain from the straw.



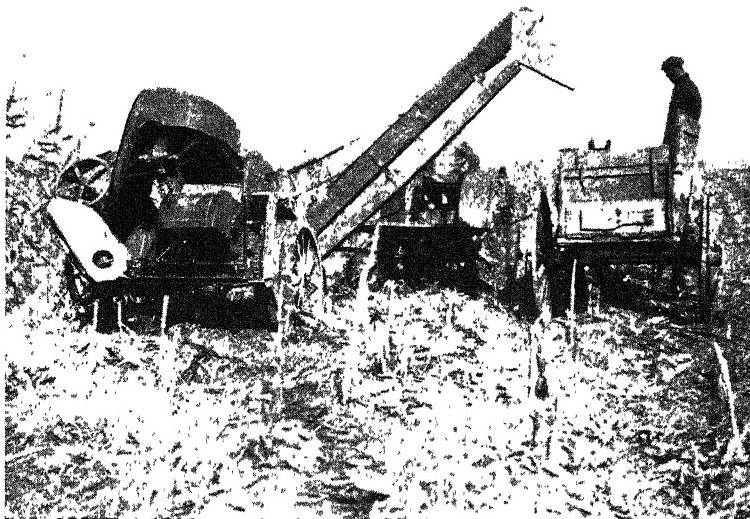
Courtesy U. S. Department of Agriculture.

Fig. 49.—Threshing wheat in the field. This method is quite different from that of pounding out the kernels with a stick or flail on the barn floor, as was done in colonial days. In Bible lands and times, oxen were driven over a floor on which the grain had been scattered.

This machine leaves the grain in sacks ready for transportation. What a contrast between these methods (Fig. 49) and those of colonial times when the crop was harvested by means of a sickle or a cradle, and the seeds were separated from the stalks by means of a flail!

The harvesting of corn has required in the past much more hand work than the harvesting of wheat. Machines are, how-

ever, coming into use more and more (Fig. 50). There are now machines which cut the stalks and tie them in bundles. Later the corn must be husked and the kernels removed from the ear before the product is ready for market. On the largest farms, practically all of this work is now done by machines. Thus we see that our ability to raise large quantities of grain is due quite as much to the use of agricultural machinery as to our vast stretches of level land suitable for farming.



Courtesy International Harvester Co.

Fig. 50.—A corn harvester at work. Formerly it was necessary to pick the ears of corn by hand, husk them by hand, and in early days even to shell the corn by hand. Now on large farms all this work is done by machines. By the help of machines like this a farmer can raise many acres of corn with comparatively few men to help him.

It is well to remember that the use of agricultural machinery has aided greatly the growth of all industries in our country. The use of machines on the farms leaves many men free to work in shoe factories, textile mills, at shipbuilding, and at many other trades. We should also know that nearly all the very useful machines used on our farms have been invented by Americans. Our manufacturers have been so successful in making farm

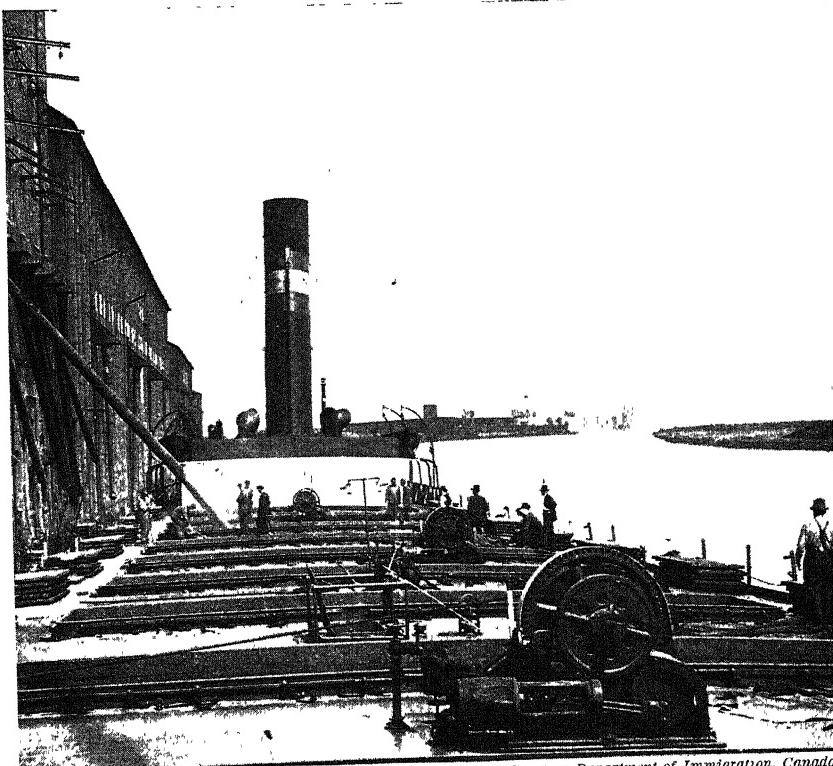
machinery that their product finds a ready market in all parts of the world. American harvesters are drawn by tractors in our own country, by horses in Argentina, by water buffaloes in the Far East, and by camels in Egypt.

How the grain is marketed. We have already seen that the methods of cultivating and harvesting wheat and corn are different. We shall also find that the methods of marketing differ and that the uses of the two crops are unlike. After wheat is threshed, the farmers' teams haul it to the railroad stations, where it is dumped into cars or into storehouses called *elevators*. From these country stations the cars are taken to the large cities, such as Chicago, St. Louis, Kansas City, Milwaukee, Minneapolis, Duluth, San Francisco, Portland, and Seattle. If the wheat is to be used in this country, it is made into flour in some of the large milling centers, such as Minneapolis, Buffalo, or Rochester. If it is to be exported, it may or may not be made into flour before it is shipped. The importing countries of Europe which raise a part of their wheat have flour mills of their own and so prefer to grind much of the grain themselves. Other countries, like the West Indies, which raise little or no wheat and have no mills buy our wheat after it has been made into flour. Less than half of our wheat is exported in the form of flour.

Aids in transportation. Cars from the farming region are quickly emptied into the elevators of the large cities. In the elevators buckets attached to belts carry the grain to floors above. When a car or ship is to be loaded from the elevators, the grain is sent down to the car or to the hold of the ship through large spouts (Fig. 51). In this way the grain is handled quickly and easily. If it were not for the many labor-saving devices used in the transportation of wheat, it would cost so much that the people of Europe could not afford to buy it.

Why we export little corn. Although we raise about three times as many bushels of corn as of wheat, we do not export nearly so much corn as wheat. There are several reasons for this. First, the people of European countries, excepting those of Hungary, Rumania, and Italy, raise little or no corn themselves. They have not learned to use corn as food and consequently pre-

fer our wheat to our corn. Furthermore corn is more likely to spoil before reaching its destination. The corn which is imported into the countries of Europe from the United States and other countries is used mainly as feed for live stock.

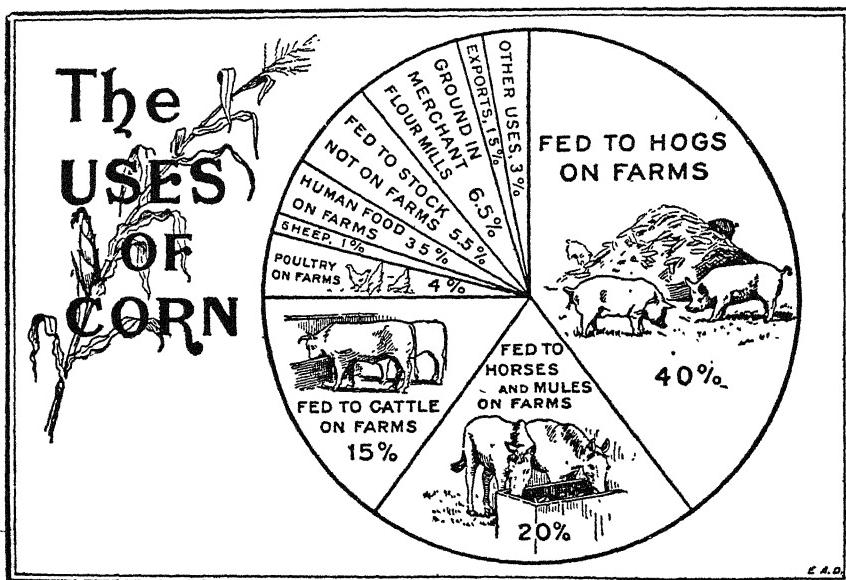


Courtesy Department of Immigration, Canada

Fig. 51.— Loading wheat at Fort William, Canada. By means of spouts passing from a grain elevator to the hold, a ship can be loaded in a few hours. The many clever devices and machines used in transporting wheat help to reduce the cost of every loaf of bread.

Another reason why we export less corn than wheat is the fact that it pays the farmer better to feed the corn to cattle and hogs (Fig. 52). He receives much more money for the beef and pork than he would receive if he sent the corn to Europe. We shall learn more about this when we take up the exportation of meats.

Countries to which our grain is sent. More than ninety per cent of the grain we export goes to Europe (Fig. 53). Of this Great Britain takes more than twice as much as any other country. Can you see any reason for this? The country which ranks next to Great Britain in the amount of wheat purchased from us is Holland. How do you account for this? The other important countries, in order, are Germany, Belgium, and France.



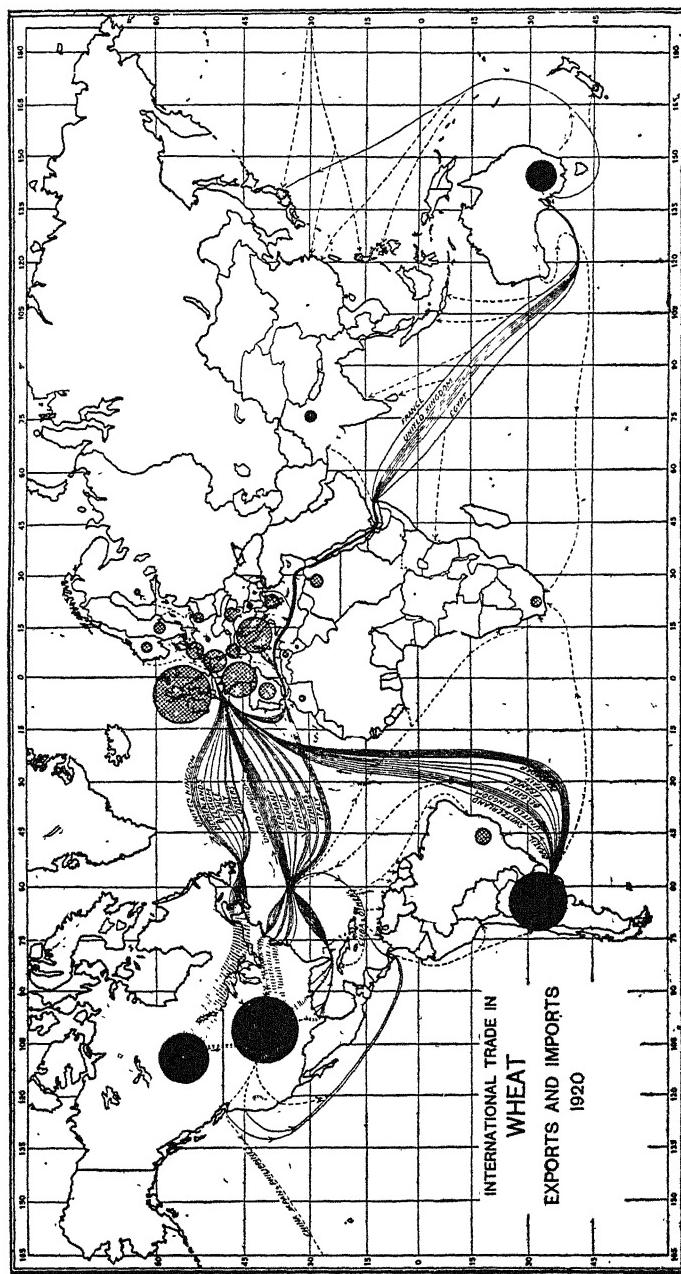
Courtesy U. S. Department of Agriculture.

Fig. 52.—This drawing shows what becomes of the corn raised in the United States.

We must not forget that all these countries raise large quantities of grain themselves; but because they are densely populated, they cannot raise food enough for their own use. Europe takes about three-fourths of the corn which the United States exports, but we export not much more than two per cent of our great crop of about three billion bushels. Several million bushels of corn are sent to Canada each year. Why are the farmers of Canada obliged to import corn?

Courtesy U. S. Department of Agriculture.

Fig. 53.—The chief wheat-exporting and the chief wheat-importing regions of the world, and the principal routes over which the grain is transported. The black circles indicate the wheat-exporting regions, and the other circles show the wheat-importing regions.



The chief corn-importing countries are practically the same as those importing wheat. The wheat and corn pass mainly through the ports of New York, Philadelphia, Baltimore, New Orleans, Galveston, Portland, Seattle, and Tacoma. The grain is shipped to the chief ports of the great industrial countries of Europe. What are these ports?

QUESTIONS AND PROBLEMS

1. Our Central Plains are called the "bread basket of the world." Why should this term be used?
2. Why is it possible to have both spring and winter wheat in our country?
3. Why do the laborers who aid in harvesting wheat travel northward with the season?
4. Why do the farmers of England and France raise more wheat on an acre of land than we do?
5. How is it possible to transport wheat from the farms of the United States to the ports of Europe at small cost?
6. Why cannot corn be raised everywhere that wheat is raised?
7. Why is the level surface of the Middle West better adapted to farming than the land in New England?
8. Account for the growth of each of the following cities as a grain market: Chicago, Duluth, St. Louis, Buffalo.
9. Why has Minneapolis developed into a great milling city?
10. Why do we not export much corn?
11. How has agriculture helped to develop the other industries of the Middle West?
12. How have the other industries of the Middle West helped to develop agriculture?

SUGGESTED PROJECTS AND EXERCISES

1. Make a map of the United States, showing areas producing wheat. On an outline map of the United States mount small pictures of wheat over wheat-producing areas, or draw small yellow bundles of wheat over these areas, or print the letter *W* over them.
2. Make a similar map of the United States for corn. Compare the two maps.
3. Make a collection of pictures showing different methods of grinding grain from the earliest times to the present.
4. Write to the United States Department of Agriculture for their catalog of publications and secure those most helpful to your class.
5. Make a large cardboard chart showing the improvement in farming machines from the sickle to the harvester. Make a collection of pictures of agricultural machines used in wheat and corn fields.



Fig. 54.—Make a collection of wheat as shown in this picture. Describe the chief processes through which the wheat passes in its manufacture; make a list of the products and state the uses of each.

6. On an outline map of the United States, locate with dots all the important flour-milling centers of the country. Indicate by means of arrows the direction which the grain takes to and from the mill.
7. Collect labels from packages containing by-products of corn, such as corn oil, corn starch, breakfast foods, etc. Notice the location of cities in which each product is made.
8. On an outline map of the United States, draw the routes over which wheat passes by lake, river, and railroad from farm to mill and from mill to eastern and southern ports of the United States. Locate milling centers and all shipping centers. Trace on this map the route of flour from the milling center to your home.

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CHAPTER VI

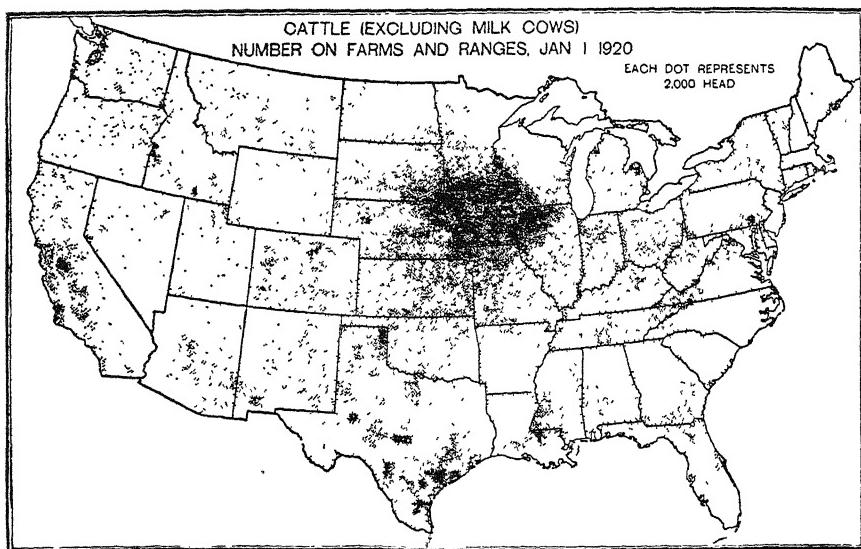
MEAT AND DAIRY PRODUCTS

Where the cattle are raised. The same part of our country which produces the largest amount of grain also supplies much of the meat consumed at home as well as that exported to Europe. The animal products produced in sufficient quantities for export are obtained from cattle, sheep, and hogs. It is said that the farmer of the corn belt sends much of his corn to market "on the hoof." Many of the cattle to which the corn is fed are raised in the states of the corn belt.

Cattle raising is an important occupation in the states just east of the Rocky Mountains, although cattle are not generally fattened there. In these states there is little rain. In most places there is grass enough for the cattle, but there is not rain enough to make it profitable to attempt to grow crops. Many calves are raised on the ranches of the southern plains of these states and kept there until they are able to withstand the cold of the northern ranches. From these pastures they are often sent to the farms of the corn belt to be fattened (Fig. 55).

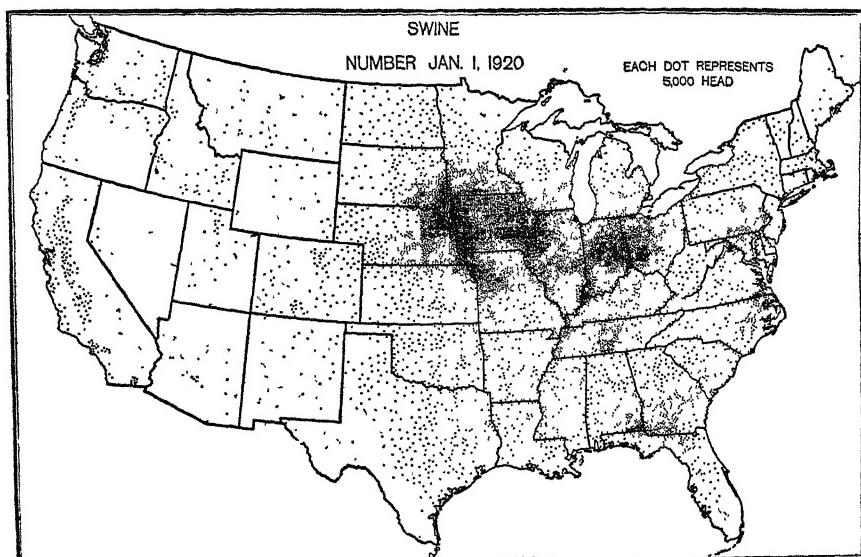
Why we raise many hogs. Hogs can be raised much more easily and in larger numbers than cattle. They can be fattened ready for killing in less than a year, while cattle must be fed from one to three years. Moreover, the hogs are often fed on material which would be wasted if it were not used in this way. Thus we can understand why the American farmer has found it profitable to sell his corn and less valuable farm products in the form of pork and lard (Fig. 56). Nearly every ship that leaves our ports for Europe contains some of the products of this useful animal.

Why we send pork to Europe. We must not suppose that the countries of Europe which import our pork and lard do not raise hogs at all. They do not, however, have much corn. They are



Courtesy U. S. Department of Agriculture.

Fig. 55.—Where are most of the cattle raised? Why?



Courtesy U. S. Department of Agriculture.

Fig. 56.—Chief areas for the raising of hogs. Do you see any relation between the dark areas on this map and the corn belt? What relation would you expect? Why?

obliged to feed their hogs on grass, beet pulp, barley, and other grains. Hogs fed in this way have more lean meat and less fat than hogs fed on corn. The hog fed on barley is called the "bacon hog"; the hog fed on corn is called the "lard hog" (Fig. 57). The best bacon, produced in the British Isles and Denmark, is imported to some extent by America. But since Europe is more densely populated than the United States, we send



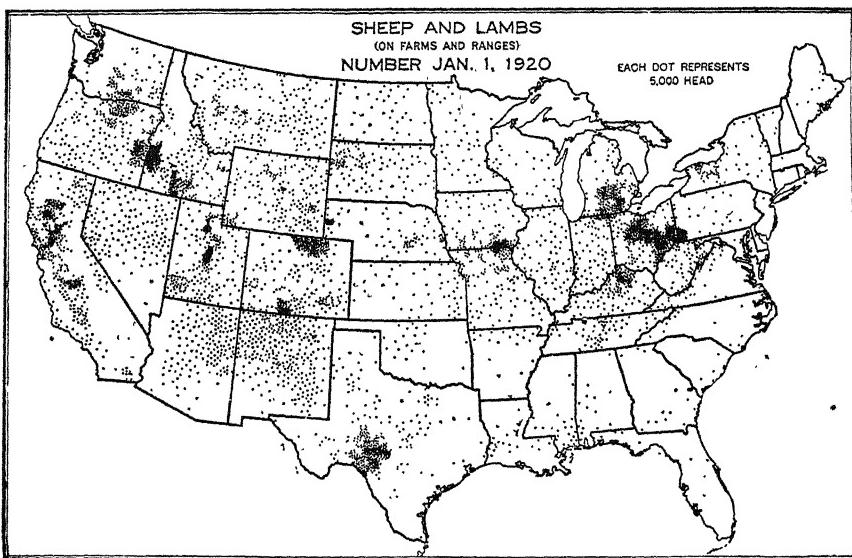
Courtesy U. S. Department of Agriculture.

Fig. 57.—These American hogs are harvesting the corn for themselves. They do the work very thoroughly and save the farmer the trouble. In this way they are fitting themselves for market.

more pork to Europe than Europe sends to us. We send Europe many more pounds of pork and its products than of beef and its products. Some years we have exported five times as many pounds of pork as of beef.

Where sheep are raised. Many thousand sheep are raised on our Great Plains, in the valleys between the mountains of our Western states and on the farms of the Middle West and the Northeastern states (Fig. 58). The states which lead in the num-

ber of sheep raised are Texas, California, Idaho, Ohio, Montana, Oregon, Wyoming, Colorado, and New Mexico. You will notice that several of these states are plateau states which lie between the Great Plains and the Pacific states and have a dry climate. Since sheep can live on coarser foods than cattle, areas may be used for raising them which could not be used for anything else (Fig. 59). In Australia sheep thrive on saltbush, a small shrub growing in regions which are almost desert. Sheep feeding on



Courtesy U. S. Department of Agriculture.

Fig. 58. — Where sheep are raised in the United States.

this shrub are said to produce wool of a very fine quality. Saltbush has been introduced into our country in order that more of our semiarid lands may be used for sheep raising. Sheep are also able to get a living on mountainsides where cattle raising is not practicable. They are allowed to remain on the higher slopes during the summer, but as cold weather approaches they are driven to the warmer valleys and plains below.

As in the case of cattle and hogs, sheep are sent to the great centers to be slaughtered. All parts of the animal are used, the wool for textiles, the skins for leather, and the flesh for food.

Our country exports very small quantities of mutton. Our need is so great that we import frozen mutton and lamb from New Zealand and Argentina.

How the meat is prepared for market. The yards in which the animals are kept after they come from the farms and ranches cover hundreds of acres (Fig. 60). In the packing house each

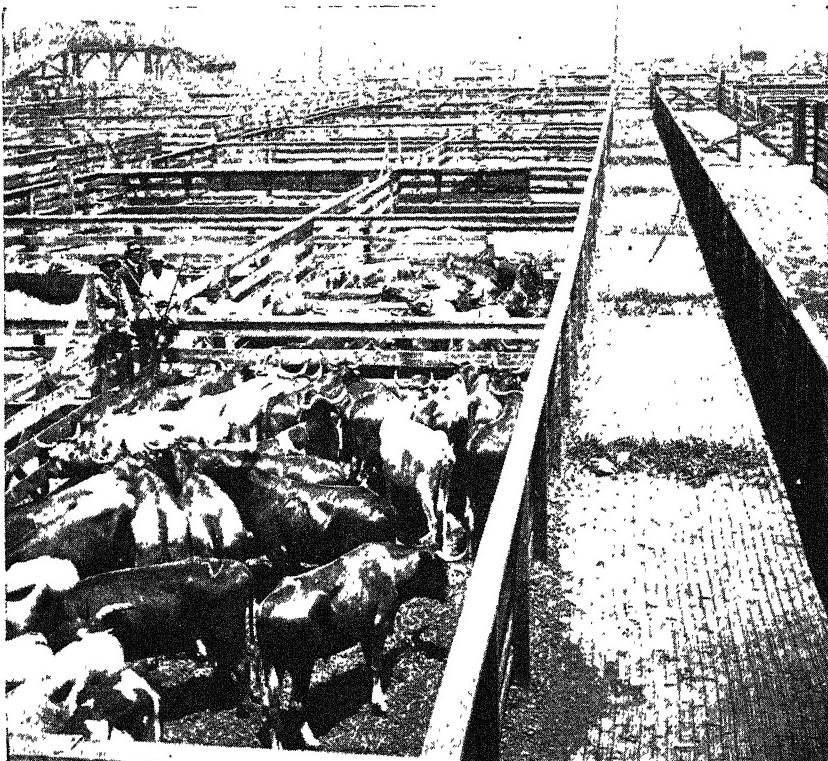


Courtesy U. S. Department of Agriculture.

Fig. 59.—In this semiarid region in Idaho, sheep are able to live where cattle would starve. Here, where the rainfall is slight and farming impossible, the sheep roam over extensive areas.

man does one particular kind of work all day long. Every man, therefore, becomes skilled, and the work is done well and rapidly.

A large part of the product of the packing houses is sent to all parts of the United States and to Europe in the form of fresh meat. Besides this, large quantities of meat are canned, some is dried, and some made into beef extract. Although much of the pork is sold while fresh, some is salted. Large quantities of



Courtesy U. S. Department of Agriculture.

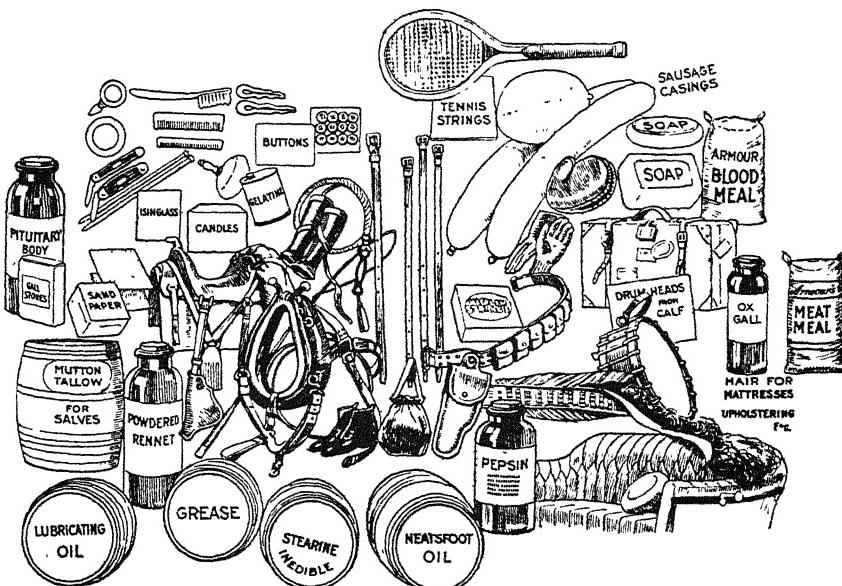
Fig. 60.—A scene in the Chicago stock yards. Here the cattle are brought by train from farms and ranches on their way to the great meat-packing plant. When a steer escapes into the streets of the city, he gives the men a lively chase. He often has to be shot before being captured.

bacon, hams, and shoulders are smoked, and much of the pork is made into sausage.

Every part of the animal is used (Fig. 61). The hides of the cattle and the skins of the sheep are used for leather. The blood and bones are used in making fertilizers and buttons. The bones are used in refining sugar. Large bones are used also in making combs, knife handles, and similar articles. The hair is used in mixing plaster. Parts of the meat which might otherwise be wasted are made into sausage. From the hoofs glue and gelatine are made. The list could be made much longer, but

this is enough to show that nothing in the packing house is allowed to go to waste.

Where the packing plants are located. The large stock yards and meat-packing plants are located in large cities, such as Chicago, St. Louis, Kansas City, Omaha, Cincinnati, Indianapolis, Milwaukee, and Denver. Let us see why these cities are the best places for slaughtering and meat packing. Most of them are in



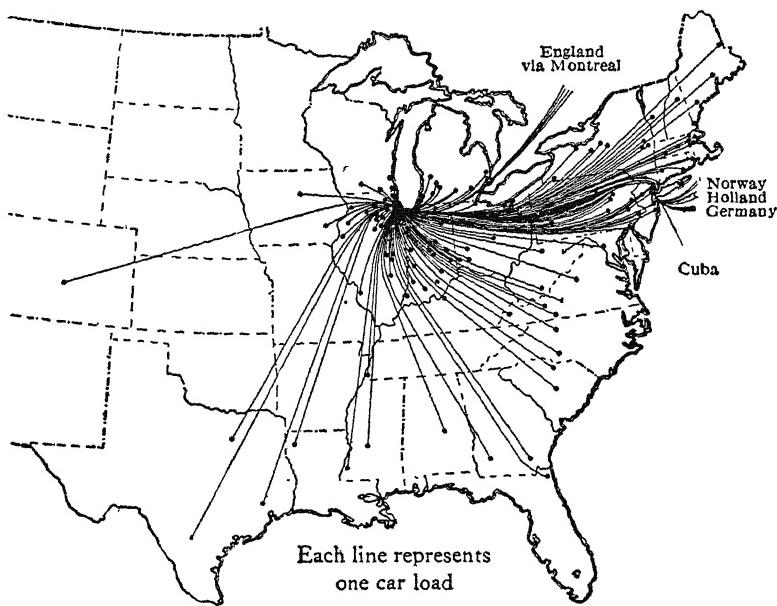
Courtesy Armour and Co.

Fig. 61.—By-products of the meat-packing industry. What part of the animal is used in each of these articles? Can you think of other by-products?

or very near the corn belt, to which, as we have seen, the cattle are sent for fattening, or "finishing off" as it is called. In the large cities there are other plants or factories which make use of the by-products, such as hair, hides, bones, and blood.

Another reason for the location of the meat-packing plants is that many railroads run to the large cities in which they are located. Over these roads cattle are sent from farms in all directions to the stock yards. After packing, the meat and by-products are sent over the railroads to all parts of the country

for home consumption and to the Atlantic ports for shipment to Europe (Fig. 62). Cold storage on cars and ships makes it possible to send fresh meat from the great packing plants of the Middle West to the manufacturing cities of Europe. The ports of the United States through which meats are sent to Europe are practically the same as those from which grain is exported. What are those ports?

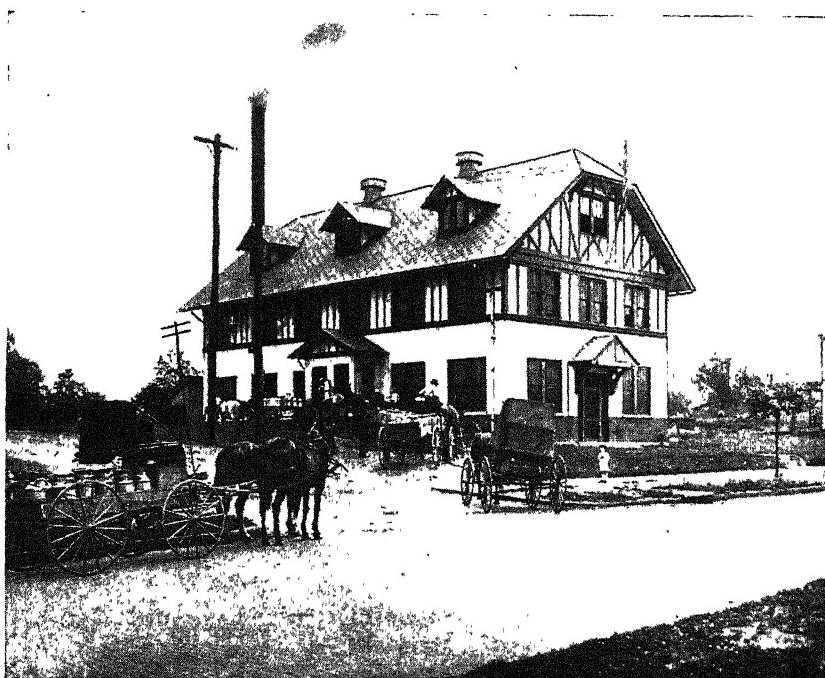


Courtesy Swift and Co.

Fig. 62.—Distribution of the products of a single meat-packing plant for one day. From what center are they sent? Why? To what parts of the country do the most of them go? Why?

Future possibilities. Except during the World War the amount of beef, pork, and mutton sent to Europe has gradually been growing smaller. The chief reason for this change is the rapid growth in the population of our country. We are constantly needing more food for our own people. Furthermore, there is now less grass land for the cattle than in former years. Land which was once used for ranches is now used for farming. New methods of cultivation make possible the raising of wheat, corn,

and other crops on land which was formerly supposed to be too dry for such use. Already the United States imports beef from Argentina and Brazil, and mutton from New Zealand. Therefore, as time goes on and the needs of our country become greater, we shall send still smaller quantities of meat to Europe. Europe



Courtesy U. S. Department of Agriculture.

Fig. 63.—A coöperative creamery in Pennsylvania. This butter factory is owned by a group of farmers who send their cream here, where the work can be done on a large scale. By uniting in this way, the farmers get a better price for their butter.

must then look elsewhere for her supply. Where will she look? Of what advantage is this beef and pork industry to us and to Europe?

Dairying. Practically all the cattle on the ranches and a large proportion on the large farms of the West and Middle West are raised for beef. On other farms of the Middle West and on nearly all the farms of the Eastern states, milk, butter, and cheese are

the chief products of the cattle industry. The many millions of people in the central and eastern parts of the United States must be supplied with dairy products. Milk for the large cities must be supplied by farms near enough for delivery while it is still fresh. Thus we find many farmers near the large centers producing milk which they take to the railroad station every day. From the country stations the large cans are taken in refrigerator cars to the city milk stations. Here it may be *pasteurized*; that is, heated to a temperature between 131° and 158° Fahrenheit for a short time. This process destroys the germs which may be present, thus protecting the health of those who use the milk and at the same time making it possible to keep it fresh for a much longer time. From the city stations wagons deliver the bottled milk to the city customers.

Butter and cheese may be sent much longer distances than milk. The farmers who live far from a market may take their milk to a creamery or butter factory (Fig. 63), where it is made into butter and then shipped in large quantities. Others may take their milk to a cheese factory from which, in the form of cheese, it may be sent to the large centers of our own country or even shipped to Europe.

In still other farming regions there are large factories which make *condensed* or *evaporated* milk. Here, after a part of the water has been removed from the milk, it is sealed in air-tight cans. Milk so prepared can be kept for a very long time and may be shipped to any part of the world.

QUESTIONS AND PROBLEMS

1. Why are the Central Plains of our country able to produce large supplies of meat?
2. How can cattle be raised in states where there is not enough rain for crops?
3. Why does Europe buy much of our pork?
4. Account for the fact that Chicago has the largest stock yards in the world.
5. Why are the sheep ranges not in the same regions as the cattle ranches?
6. There are fewer sheep in most states in the eastern part of our country than in the western part. Why is this so?

7. Why are sheep sheared in different months in different parts of the world?
8. Why have Omaha, St. Louis, and Kansas City become important meat-packing cities?
9. How have railroads aided the development of the agricultural regions of our Central Plains?
10. What other industries of this region are closely related to the packing industry?
11. How do the by-products help to make the cost of meat less?
12. Why do some farmers produce milk while others produce butter or cheese?

SUGGESTED PROJECTS AND EXERCISES

1. Make as long a list as you can of the articles made from the by-products of the packing houses.
2. Make a collection of pictures illustrating as many phases of the cattle and meat-packing industries as you can.
3. Make a map showing the cattle-raising areas of the United States. Show the areas where the most cattle are raised, using small pictures, drawings, or shading. Locate the important meat-packing centers. Compare this map with the corn map which you have made.
4. Make a similar map for swine. Compare this also with the corn map.
5. Make a similar map for sheep.
6. Prepare an exhibit of by-products of the meat-packing industry.

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CHAPTER VII

SUGAR FROM MANY SOURCES

Consumption of sugar in the United States. This country is the largest user of sugar in the world. In 1924 we consumed 12,873,964,000 pounds. With an estimated population of about 113,000,000, this means that every man, woman, and child in this country had, on an average, about 114 pounds as his annual share. This, of course, included our candy as well as the sugar used in our homes.

Sugar in ancient times. In the early days no such amount of sugar was used as now. No reference is made in the Scriptures to the use of sugar, for it was not known as an article of food. Children of ancient times knew nothing of candy, but they had in its place honey and the honeycomb.

While sugar was not used as a separate article of food, it was present then, as now, in all fruits, such as dates, figs, and grapes, and in many kinds of vegetables. Of course all starch in their foods, as in our own, was changed into sugar by the process of digestion ; so the body had no real lack of sugar after all.

How sugar has come to be extensively used. In the early days men learned how to separate sugar from fruits in very small quantities and by difficult methods. Sugar thus obtained was probably used as a medicine. Later more was produced, and sugar became a luxury, used only by the more wealthy people. Men have now learned how to produce it in abundance, in a very pure condition, and at a low cost. For these reasons sugar has taken its place permanently among our common articles of food and commerce, and is looked upon as a necessity. This passing from a luxury to a necessity has been of recent date. Since the use of steam power for manufacture and transportation, great advancement has been made in the sugar industry. During the

past fifty years its production has increased sevenfold. But it was not until the middle of the last century that sugar became a staple article of food in every household of the land.

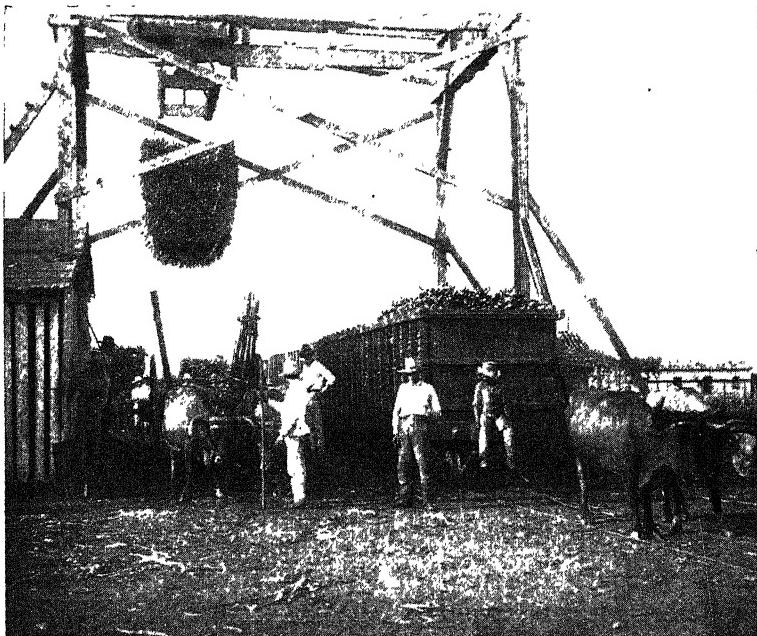
The *sugar cane* and the *sugar beet* are our two great sources of sugar at the present time. The sugar-maple tree was of great importance to the early colonists, as it furnished their families with a supply of sugar and sirup.

The sugar cane. The plant resembles our Indian corn, to which it is closely related, though it grows to a greater size. In the early part of the sixteenth century sugar cane was introduced into the West Indies, which have ever since been important sugar-producing areas. In 1751 sugar cane was introduced into the American colonies from Santo Domingo, and by 1800 the growing of cane had become an established industry in Louisiana. The plant requires a rich lowland soil with a warm, moist climate. It does best in a temperature of 75° to 80° Fahrenheit the year round. The tropical countries are best suited to its growth, but it often does well in a warm temperate section with a long growing season, like that of Louisiana.

How sugar cane is raised. Sugar cane is not grown from seed, like Indian corn, but from the stalk of the plant. The stalk is cut into pieces a few inches long, placed in furrows carefully, and covered with earth. Sometimes the stalk is planted without cutting. Sprouts are sent up from each joint. The crop is cultivated much like corn and is ready for cutting in about eight months (Fig. 64). In regions free from frost the year round a field, once planted, lasts for several years. If frosts occur, annual plantings are necessary. Cuban growers regularly plant once in eight or ten years. Louisiana is at a great disadvantage in being obliged to make annual plantings. It takes approximately four tons to the acre to do the planting, and the yield is from twelve to fifteen tons per acre. The real crop is, therefore, the difference between the amount planted and the crop harvested. In Cuba the yield per acre is much larger than in Louisiana, and the cane is richer in sugar. Furthermore the planter is not under the expense of annual planting. These facts help us to understand some of the reasons for the slow develop-

ment of the sugar-cane industry in Louisiana and adjacent states. Great efforts have been made to increase the industry here, but at the present time only about four pounds of cane sugar per capita are produced annually in our own country.

How sugar is made. After the stalks have made the necessary growth, the leaves are stripped off and the stalks are cut and



Courtesy Pan-American Union.

Fig. 64.—When the sugar mill is at a distance from the plantation, the cane is sent to it by rail. This picture shows how a whole load of cane is lifted at once.

carried to the sugar mills (Fig. 65). These mills are large and expensive affairs and usually require several thousand acres of cane to supply them. Here the stalks are passed through several sets of iron rollers which crush them and press out the juice. This juice is then evaporated, and the sugar, by crystallizing, is separated from the molasses. It is then known as *raw sugar*. The molasses is reboiled a second or third time, and more sugar is secured. The raw sugar is sent away to the refineries, where it is made into fine white sugar. Important refineries are located

in all our large seaboard cities (Fig. 66), where raw sugar can easily be obtained from abroad and where there is a market for refined sugar.

The sugar beet. This plant is similar to our common garden beet but is much richer in sugar. Such beets have been obtained from the common kind by a process of careful selection. From



Courtesy New Orleans Association of Commerce.

Fig. 65.—A mass of sugar cane cut and delivered at the mill, where it will be crushed and the juice pressed out and made into raw sugar. In what state was this cane probably grown?

year to year some of the plants containing the highest percentage of sugar were saved for seed. In this way beets containing more and more sugar were obtained. The sugar content of the present sugar beet is three times as great as that of the one from which it was derived. This is an excellent example of the application of science to agriculture.

How the beet came to be used. Before 1800 the world had depended almost entirely upon the sugar cane for its supply of

sugar. It had been known for some time, however, through the study of German and French scientists, that the beet was rich in sugar. Early in the nineteenth century, at a time when French ports were closed to imports on account of wars, an effort was made to secure the needed sugar through the extensive cultiva-



© Brown Bros.

Fig. 66.—Raw sugar arriving at the refinery in Brooklyn, New York. Where have these bags of raw sugar probably come from? Where will the sugar be sold after it is refined?

tion of the beet. This effort was not a complete success, but it showed very clearly that sugar could be obtained in this way, and the industry was continued in both France and Germany. Its progress was slow until about the middle of the nineteenth century. The industry then became firmly established in Europe. In 1914 Germany held first rank in the world as a beet-sugar-producing country.

Raising the crop. The beet does best in a temperature of about 70° Fahrenheit during the growing season. This means that it is a plant of the temperate regions, while the sugar cane is of the torrid belt. The beet grows best in a fertile, mellow soil with a moderate amount of spring and summer rain (Fig. 67).



Courtesy U. S. Department of Agriculture.

Fig. 67.—A field of sugar beets in Michigan, pulled up and ready for the factory. The United States makes three times as much sugar from beets as from cane. What state leads in its production?

Irrigated districts are often well adapted to the crop. The crop requires a large amount of hand labor. For this reason cultivation can be carried on best in a region where there is much cheap labor. In Germany great numbers of women and children are employed in thinning and weeding the delicate plants. The industry is naturally located in regions of relatively dense population. For these reasons western Europe has become the most important region of the world for the production of beet sugar.

Making the sugar. The beets are cut into small pieces and soaked in water, which takes the sugar into solution. This solution, after certain impurities are removed, is treated in much the same way as the juice of the cane in the making of cane sugar. Raw beet sugar is not so pleasant to the taste as raw cane sugar; but, when refined, it is equally good. The molasses which comes from the beet is not used on the table, but is of value in the manufacture of commercial alcohol and in making feed for cattle.

Growth of the beet-sugar industry in the United States. The American farmer, with his many acres and few helpers, does his work mainly by machinery. He has not been attracted by a kind of agriculture which calls for much hand work and few machines, as does the beet-growing business. He has known what he could do with his corn, wheat, and potatoes, but has not felt sure about the beet. Not all parts of our country are suited to the crop, and it has taken time to find this out. Under these conditions it is not surprising that beet growing has made rather slow progress. The industry now is well established and is progressing at a rapid rate, with excellent promise for the future. Already the beet-sugar crop of the United States is more than three times that of the cane. The leading areas for production of the beet are the irrigated lands of Colorado, California, Utah, and Idaho. Michigan and Nebraska are also important producers (Fig. 68). The industry is also a growing one in New York, Ohio, Minnesota, Oregon, and Washington.

Rivalry between beet and cane sugar. In the world at large there is an interesting rivalry between beet and cane sugar. For the fifty years preceding the twentieth century the beet had much the larger increase and in the last part of the nineteenth and in the early years of the present century was actually ahead of the cane. Cane sugar is, however, now distinctly in the lead for the world at large. Rivalry between the two is never in the same area, for, as we have seen, one is a tropical product and the other a product of the temperate regions. The beet has the advantage of being produced near the sugar markets and in populous areas of intensive agriculture where many people can be employed. The beet tops and the pulp, after the sugar is

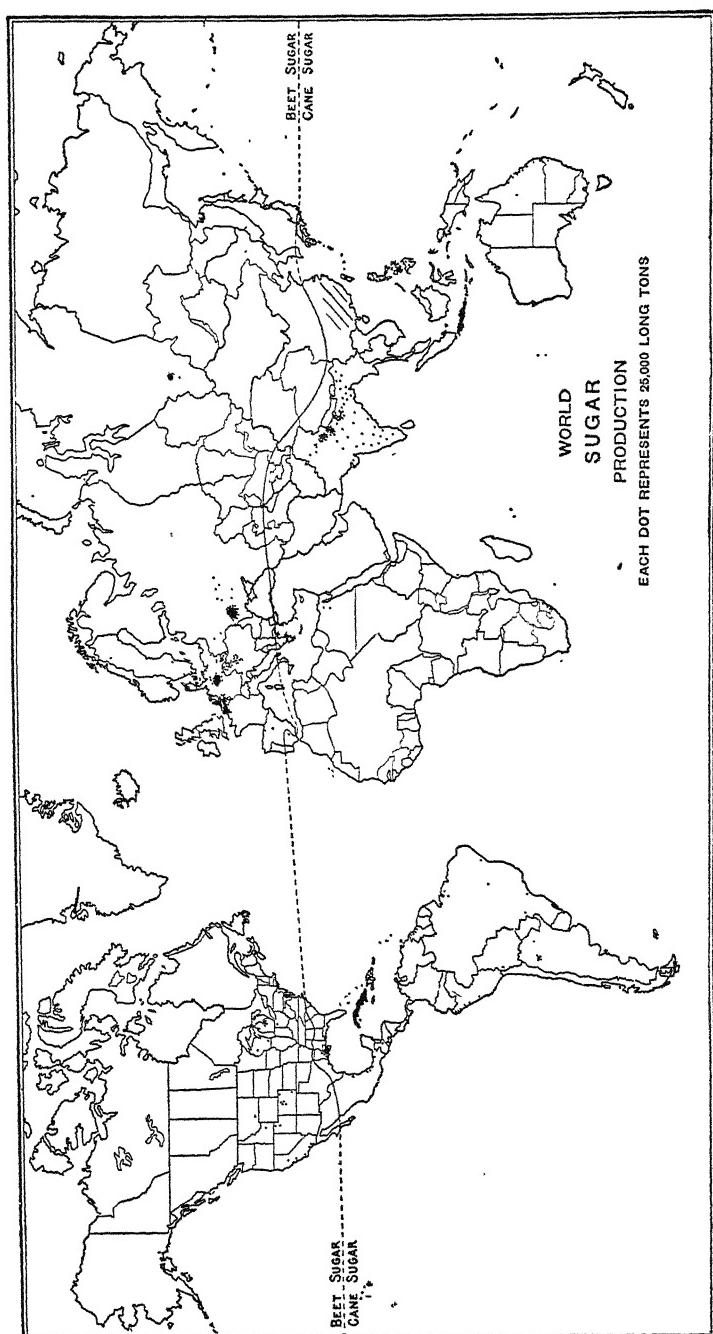


Fig. 68.—On which side of the dotted line is beet sugar grown? Why?

extracted, are of value as food for farm animals, thus adding materially to the value of the crop.

Sugar in commerce. The United States produces about one quarter of the sugar that we use. We depend largely upon our neighbors for the supply of our needs (Fig. 69). Sugar is one of our greatest imports; it is estimated that we take about one-fifth of the world's production. Cuba and our island possessions, Hawaii, Porto Rico, and the Philippines, furnish us with the greater part of our supply. The Hawaiian supply ranks next to that of Cuba. We draw also upon the East and West Indies, and upon Central and South America for part of our supply. Cuba

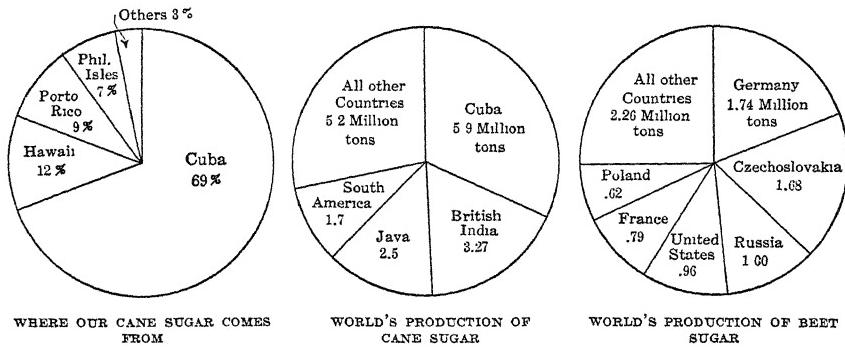


Fig. 69.—Sugar production, average for 1926.

sends practically her entire crop to the United States. Much American capital is invested in the Cuban sugar plantations, thus giving Americans large interest in Cuban affairs.

The refining of sugar calls for the investment of vast sums of money in great buildings and equipment. The business is in the hands of great corporations managed by a few people who have it largely within their power to fix the price of sugar. Other corporations, such as those handling beef, oil, coal, and steel, have similar power. The temptation is to make the prices higher than need be in order to secure large profits. How to regulate these corporations so as to do no injustice to them and yet to protect the public is one of the difficult present-day problems.

QUESTIONS AND PROBLEMS

1. At the outbreak of the World War sugar advanced greatly in price. How do you account for this?
2. Why did Europe begin to make sugar from beets? What nation greatly improved the sugar content of the beet? How?
3. Why has beet raising progressed slowly in our country? Which will be raised in greater quantities in the future, the beet or the cane? Why? Which does the United States produce more of to-day?
4. Why does western Europe lead in the production of beet sugar?
5. The United States buys a very large part of Cuba's sugar crop. How is this an advantage both to Cuba and to the United States?
6. Why has sugar production increased greatly during the past hundred years?
7. Why are refineries built in our coast cities? Why not in the localities where the crop is grown?
8. How many possessions of the United States grow cane sugar? Name them.
9. From what islands do the Atlantic coast and the Pacific coast refineries get most of their raw sugar?
10. How has science helped in the beet-sugar industry?
11. How is molasses made? Where do we get most of this product that we use?
12. What part of the sugar used in the United States is raised here?
13. Why is the sugar-refining business largely in the hands of great corporations? What danger is there in this? What advantage?

SUGGESTED PROJECTS AND EXERCISES

1. Arrange a sugar exhibit by securing small quantities of the different kinds of sugar and products resulting from its manufacture, together with pictures illustrating the industry.
2. By a series of pictures make a chart telling the story of sugar from the planting to the table.
3. On an outline map of the world, color in red all beet-sugar-producing areas, and in blue all sugar-cane-producing areas. Which seem to be in temperate regions and which in tropical?
4. On an outline map of the United States color the states producing beet sugar or cane sugar, using different colors for each kind. How far is your home from the nearest area?
5. Trace the route of sugar from Hawaii to your home. Do the same for Cuban and Philippine sugar.

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CHAPTER VIII

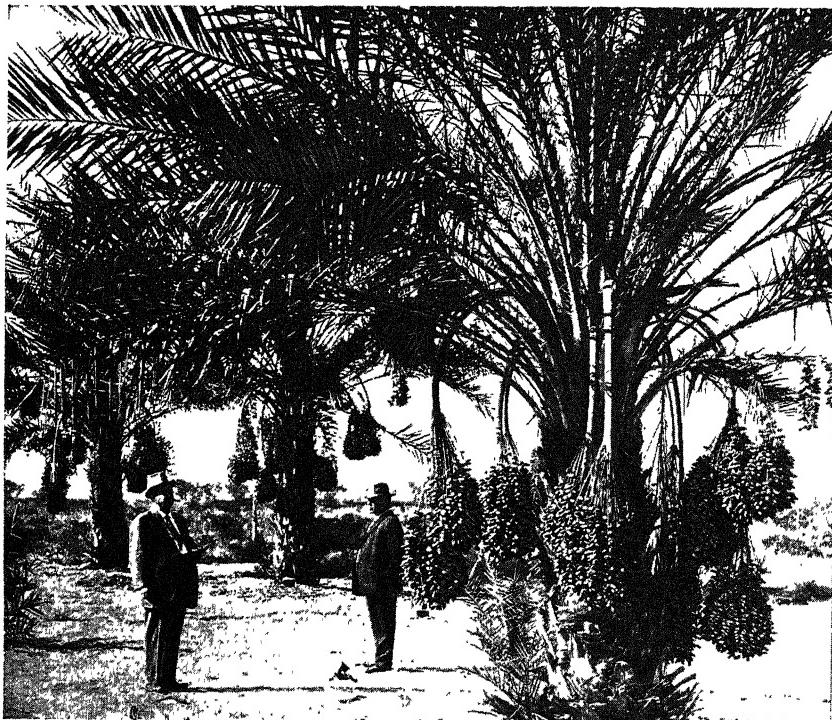
FRUITS FOR ALL SEASONS

Where our fruit comes from. Have you ever thought as you visited a fruit store that nearly every kind of fruit in the store is raised in your own country? There are apples, pears, peaches, and grapes, which are grown in the northern part of the country, and oranges, lemons, grapefruit, and pineapples, which can be raised only in the warmer climate of some of our southern states. We also see figs, dates, and olives, which thrive in the arid regions of the Southwest. The great extent of our country gives a variety of climate which makes it possible to grow many kinds of fruits. Fruit of some kind grows in nearly all parts of the United States. But certain states, because of favorable conditions, have become noted as fruit-growing regions.

Fruit growing in California. California leads all other states in the production of fruit. This state is noted for its warm, sunny climate. In the southern part of the state there is bright sunshine three hundred days in the year. There are great stretches of fine, alluvial soil and many mountain streams by means of which the groves and vineyards can be irrigated. If you should ride through the southern part of the state you would pass for miles through orange groves in which nearly three-fourths of the oranges produced in our country are raised. In the same region lemons and grapefruit are raised. In the southernmost part of the state we should see great clusters of dates hanging from the date palm (Fig. 70). In central California you would also see vineyards with delicious grapes. You would find large orchards of plum trees, the dried fruit of which we know as prunes. In the same region are fig trees and olive orchards.

The fruits of California are sent to market in many forms. Oranges and lemons are carefully wrapped in papers, crated, and

shipped in refrigerator cars to all parts of the United States and Canada (Fig. 71). California is, however, far away from the most thickly settled parts of the country. For this reason it is especially necessary to preserve much of the fruit before it is sent to market. Now it happens that the warm, sunny climate of



Courtesy Jack B. Page.

Fig. 70. — Date palms on the irrigated lands of Arizona. These are likely to become important food-producing plants in America, as the conditions in this part of our country are very favorable for their growth. These palms are one of the contributions of Mediterranean countries to successful fruit growing in our southwestern states.

the fruit-growing section of the state makes it very easy to dry the fruits (Fig. 72). Tons of raisins are produced by leaving grapes out in the sun to dry. In the same way prunes are prepared for market in large quantities. Of this fruit one-half of the world crop is raised in California. San Jose is the chief

center of the industry. The prunes are prepared for market by picking and dipping in hot water. They are then exposed to the sunlight for about a week, after which they are ready for packing. The industry has increased rapidly in recent years. Thirty years ago the United States imported large quantities of prunes. To-day we export more than 15,000 tons per year, a part



Courtesy Los Angeles Chamber of Commerce.

Fig. 71.—Washing oranges in preparation for sorting and packing. How are the oranges carried to the floor above? Why are oranges graded according to size?

going even to the fruit-growing countries of southern Europe, where much dried fruit is also produced. Peaches, apricots, and figs are also dried and marketed in large quantities. Many of the preserved fruits are exported through the ports of San Francisco and Los Angeles.

Much fruit, especially pears, peaches, and apricots, is preserved by canning. The oranges that are not sent to market fresh are made into jellies and marmalades. If it were not for

these methods of preserving, California could not be the great fruit-growing state that it is. Its distance from the great centers of population in the central and eastern parts of the country makes it very difficult to market fruit in fresh condition. The cost of transportation is so great that only the best of the crop is sent to distant markets as fresh fruit.



Courtesy San Francisco Chamber of Commerce.

Fig. 72.—Drying raisins near Fresno, California. Could raisins be dried in this way in all parts of the country? Why can it be done here? Why is it necessary to irrigate the land in this region?

Fruit production in Washington, Oregon, and Idaho. These states constitute one of the leading apple-growing regions of the country, Washington leading all the states. The apples are carefully wrapped in paper, packed in boxes, and shipped to many states. They are shipped even to Europe, where they arrive in excellent condition. This fruit is often found in the stores of the apple-

growing states of the East. The price of one of these apples is often greater than that of an orange grown in Florida or California. The bright color of the fruit grown in these states is doubtless due to the many days of bright sunshine of the irrigated valleys in which they are raised. Peaches, pears, and other fruits are raised in the valleys of these states and in north-



Courtesy Northern Pacific Railroad.

Fig. 73.—Apple trees loaded with fruit in the Yakima Valley, Washington. These beautiful and delicious apples are sent to all parts of the United States and to Europe.

ern California. All the Pacific states have come to hold important places among the fruit-growing states of the country.

Fruit near the Great Lakes. Another important fruit-growing region is found in the states lying just east of the Great Lakes. The winds from the lakes prevent the orchard and vineyards from being injured by frosts. Here, as in all our northern states, it

often happens that on warm days in early spring the buds of fruit trees and vines begin to swell. In that condition they are easily injured by frost. A few days later a cold wave may come and freeze the buds, and the crop for that year is lost. If cool winds blow from large bodies of water, such as the Great Lakes, the buds will not open in very early spring. Thus they are protected, and the trees yield a good crop. In the autumn warm winds from the lakes protect the fruit itself from frosts. Since the winds in this latitude are chiefly westerly winds, we can understand why the region to the east of the Great Lakes is well suited to fruit growing. Rochester is the center of an area where there are many large nurseries engaged in supplying farmers with apple trees and other fruit-bearing trees, shrubs, and vines.

In the Great Lakes region, besides apples, pears, and peaches, many grapes are raised. Since the climate here is moist, the grapes cannot be dried in the sun as in California. Some of them are packed in baskets and sent to market; others are used for making grape juice. Examine the labels on the bottles of grape juice in your grocery store to find out where it was made.

Apples in the eastern states. New York holds second rank in the production of apples. The apples of this state, instead of being packed in boxes, as in Washington and Oregon, are packed in barrels (Fig. 74). Many thousand barrels are shipped from New York and other eastern and central states to the countries of Europe. Apples that are small or are otherwise unsuitable for packing are either dried or made into cider vinegar. Other states of this region producing large quantities of apples are Pennsylvania, Ohio, and Michigan. Farther south in Virginia, West Virginia, and near-by states apples are raised in considerable quantities. In these states the chief fruit-growing region is in the valleys of the Appalachian Highland and on the Piedmont Plateau to the east. One of the ridges of Virginia, noted for its apple orchards, is known as Apple Pie Ridge.

On the Piedmont of Virginia, Thomas Jefferson raised Albemarle Pippins before the Revolutionary War. This region was exporting apples to England as early as 1759. The American minister to England presented Queen Victoria with several barrels

of Albemarle Pippins in 1837. She was so pleased with them that she caused the import duty on apples to be removed. From that time the exportation of American apples to England increased rapidly. We send more apples to England than to any other country.



Courtesy U. S. Department of Agriculture

Fig. 74.—Packing apples in barrels. In what parts of the United States are apples packed in this way? Where may these apples be consumed? Why do fruit growers of the Western states prefer to wrap their apples in paper and pack them in boxes?

Apples in the Ozark region. Another important section of the United States noted for the growing of apples is the Ozark Mountain region of Missouri and Arkansas. Here there are many orchards ranging in size from one hundred to one thousand acres. It is from the counties of Benton and Washington located in the Ozark section of Arkansas that apples are now sent to the king of England.

Peaches in the eastern states. Peaches are raised in all the Atlantic and Gulf states from Massachusetts to Texas. Georgia produces more than any other of these states. Peaches raised in the southern states ripen early and are sent to northern markets before those raised in the north are ripe. They can be kept in good condition only ten days or two weeks. Therefore many of the peaches of the eastern states, like those of California, are canned, dried, or evaporated before being sent to market. Much of the dried fruit is exported, especially to the countries of western Europe. The region around Baltimore is one of the most important centers for the canning of fruits and vegetables in the United States.

Fruit production in Florida. Florida is a very important fruit-growing state. The fruits grown are chiefly the orange, grapefruit, and pineapple. Florida produces ninety-five per cent of all the grapefruit raised in the country and is the only state in which pineapples are raised. Look at the paper wrappers on Florida oranges and then find on the map the names of the places where the oranges were grown. When frosts occur in orange-growing regions, much harm is done to the trees as well as to the fruit. On very cold nights many small, smoky fires, called *smudges* (Fig. 75), are lighted near the trees to prevent their being injured by frost. Fruit raised in Florida is sold throughout the eastern and central parts of the United States and Canada.

How our markets are supplied with fruits all the year. The fruit-growing industry thrives best in places favored with easy and rapid transportation. In temperate latitudes most fresh fruits grown near at hand can be had only in the warm season. At other times the markets must be supplied from other latitudes. In winter, spring, and early summer our northern states receive many fruits, berries, and vegetables from states farther south. For instance, northern markets offer for sale in winter strawberries brought from states far to the south. We also find peaches on the dining tables in the north long before those of the locality are ready for harvest. As the season advances, fruits ripen in states farther and farther north. It sometimes happens in the latter part of the summer that fruit is shipped south from northern

states to those states whose season for fruits has gone by. Rapid transportation has made it possible to ship fresh fruit to market in a few hours or in a few days at most. Moreover, cars and steamers are now provided with ice or refrigerating plants which help to keep the fruit in good condition. By means of this



Courtesy Los Angeles Chamber of Commerce.

Fig. 75.—Trying to save an orange grove from frost. In regions where oranges and lemons are grown, the temperature seldom reaches the freezing point. When it does, the heat given off by these small stoves is often enough to save the crop. The smoke aids by serving as a blanket to prevent the escape of heat from the earth.

exchange of produce we have a much greater variety than we could have if we depended wholly upon the home region. For such fruits as bananas and coconuts we must look to regions having hot climates, like the West Indies and the countries of Central America.

QUESTIONS AND PROBLEMS

1. What fruits can we raise which Great Britain cannot? Why this difference?
2. Why could the early colonists not obtain tropical fruits and fruits out of season as we do?
3. How are new fruits and grains produced?
4. Why does California lead all other states in the production of fruit?
5. Why are many of the fruits dried or preserved before being sent to market?
6. How do the kinds of fruits raised in Oregon and Washington differ from those raised in southern California? Why?
7. In what ways is the climate near the Great Lakes particularly favorable for fruit raising?
8. Nearly all the oranges and grapefruit raised in this country are produced in California and Florida. Why is this so?
9. Why can figs and dates be grown in our southwestern states?
10. How is it that we find in our fruit stores nearly all kinds of fruit at all times of the year?
11. How can oranges and other fruits be sent from California even to the Atlantic states in good condition?
12. How are orchards protected from frosts?
13. What fruits does our country export? What fruits do we import?

SUGGESTED PROJECTS AND EXERCISES

1. Make a collection of labels taken from cans of fruit, preserves, jams, bottles of grape juice, boxes of raisins and other dried fruits, wrappers of oranges, apples, etc. Note the part of the country in which each was packed or grown.
2. Go to your fruit store and study the labels on boxes, crates, barrels, etc., and make a list of the places from which each came.
3. Make a list of the different ways of using fruit.
4. On an outline map of the United States draw the routes that fruits must take from producing regions to markets.

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CHAPTER IX

COTTON FOR HALF THE WORLD

What cotton is. Cotton consists of the fibers attached to the seeds of the cotton plant. Like the hairs on the seeds of milkweed, these fibers allow the wind to scatter the seeds far from the parent plant. This is their use to the plant itself. But man has found that these fine, soft hairs can be made very useful to him also. He takes the cotton fibers, twists them into thread, and then uses the thread or cotton yarn for making cloth. So he cultivates the plant for the fibers and attends to the scattering or planting of the seeds himself.

Why the world needs much cotton. The cotton plant is one of the most useful plants that man cultivates. The fiber that it furnishes is used to make clothing for the people of nearly every part of the world. We can hardly imagine the vast quantity that is needed. From it many kinds of cloth are made. Some of these are coarse; others are almost as fine as silk; still others are so thick and heavy that we can hardly distinguish them from woolen cloth.

Besides being used for clothing, cotton is used as filling for mattresses, for making awnings, tents, sails, paper, thread, twine, and many other useful articles. Perhaps you already know that cotton is used in making celluloid and in the manufacture of cordite, one of the most powerful explosives. We shall also find that the seed, as well as the fiber, has been found to be a very useful part of the plant. Because this plant supplies so many of our needs, it has become one of the most important articles of industry and commerce.

How long has man used cotton? Cotton has been spun and woven into cloth for thousands of years. Indeed no one knows when or where it was first used. The plant was growing in

America at the time of the voyages of Columbus, but it was known and used in Asia and Africa thousands of years before that time. It was probably first grown and made into cloth in India. Hundreds of years before the birth of Christ, cotton was imported from India into the countries of Asia Minor and southeastern Europe. This cloth was used by the inhabitants of



Courtesy U. S. Department of Agriculture.

Fig. 76.—Picking cotton on a Southern plantation. No machine has as yet been invented which will do the work as well as it can be done by hand. Practically all cotton picking is still done as shown here.

Greece and Rome when the inhabitants of central and western Europe were barbarians and dressed themselves in the skins of animals. The manufactures of those days were of the simplest kind. Spinning was done by means of the distaff, and cloth was woven on small hand looms. The cloth made in those early days in India was very fine and beautiful, but there was very little of it. With all our modern machines we cannot equal some of the textiles of those times.

Where cotton is raised. The plant requires a long growing season free from frost. The climate should be warm and rather moist. These conditions are found only between the latitudes of 42° N. and 30° S. Can you tell why high temperatures extend farther from the equator in the northern hemisphere than in the southern? The areas most favorable for the growing of cotton are the southeastern part of the United States, central and



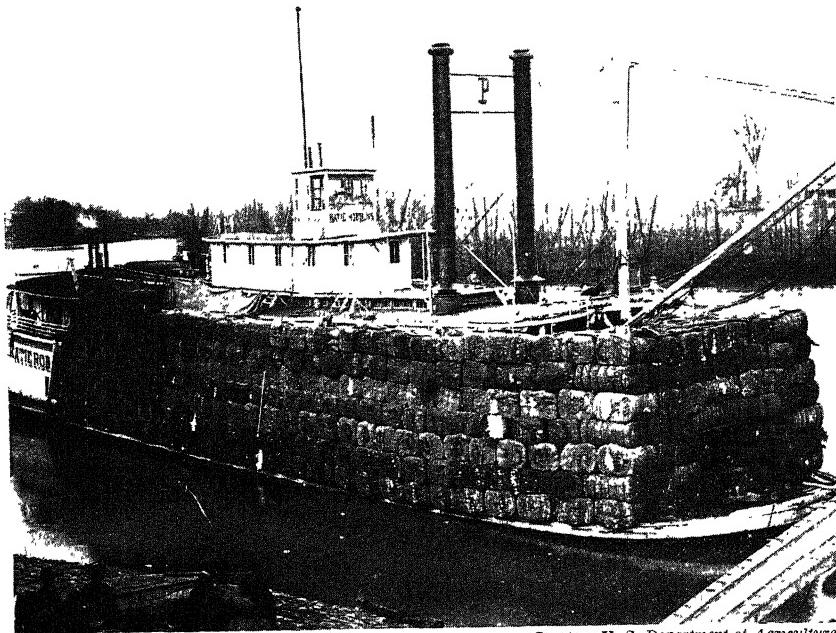
Courtesy U. S. Department of Agriculture.

Fig. 77.—Loads of cotton at the gin. The cotton, by means of an air blast, is sucked through the pipe into the gin, where the fiber is separated from the seeds.

southern India, and northern Egypt. Smaller quantities are raised in Brazil, Peru, Argentina, Bolivia, China, Japan, and parts of central Africa. In our country Texas produces more than any other state.

How cotton is harvested. If you could visit a cotton field at the time of harvest, you would find it a most interesting place. You would see a field covered with many rows of coarse plants bearing on their branches many beautiful white tufts of fibers

attached to the cotton seeds. You would see men and women, in many places negroes, collecting these white tufts in long sacks or baskets (Fig. 76). As the receptacles are filled, they are emptied into wagons which are driven through the fields. In the past the harvesting of cotton has been done almost wholly by hand. Not all the pods, or *bolls*, are open at the same time. Therefore, in



Courtesy U. S. Department of Agriculture.

Fig. 78. — Cotton which has been ginned and baled, on its way to market. This small river steamer will take it to a large port where it will be transferred to an ocean-going ship for delivery to New England or to some European country.

picking, it may be necessary to go over a field three or four times. Harvesting by hand requires much labor and is very expensive. Machines for harvesting cotton have been invented but have not proved satisfactory. They injure the unripe pods and take in with the fibers leaves and other parts of the plants.

After the cotton has been picked from the plants, it is taken

to the *cotton gin* (Fig. 77), where it is separated from the seeds. It is then pressed into bales ready for shipment (Fig. 78). From the gins the bales are sent by rail to the mills of the southern states, or by rail and steamer to the mills of New England, and by steamers from the ports of the United States to the importing cities of Europe.

Most of our cotton is exported from Galveston, Houston, New Orleans, Mobile, Charleston, Savannah (Fig. 79). On an out-

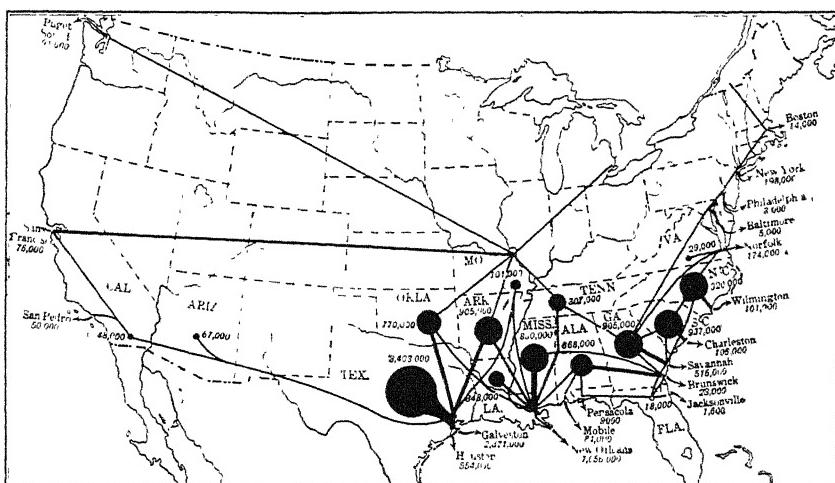


Fig. 79.—This map shows the average number of bales of cotton produced in the southern states for the years 1920-1923. The lines show the routes to exporting points. Figures beneath names of cities show annual number of bales exported.

line map draw the steamer routes from these cities to Liverpool, Hamburg, Havre, and Kobe.

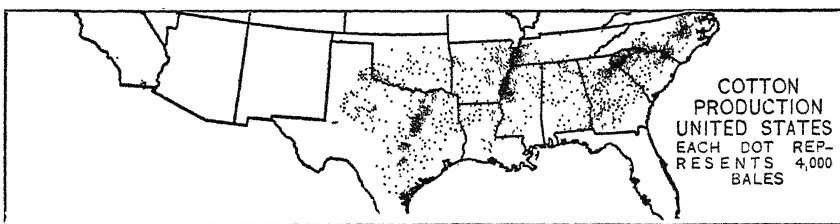
Insect pests. Like nearly all other agricultural products, the cotton plant is attacked by insects. The insect pest most injurious to the crop is the *boll weevil*. This is a small beetle about one fourth of an inch long. The young of the beetle feed on the buds and on the bolls. Buds so attacked do not open; and if bolls are attacked, the fiber and seed are injured or lost. Thus the cotton crop may be greatly reduced. The yearly loss to the cotton growers of the country is estimated at between fifty and one hundred million dollars. It is very difficult to prevent the

injury done by the pests. In certain areas of the South it has been necessary to give up the raising of cotton entirely. In other places by alternating cotton with other crops, by planting early varieties, and by destroying all plants in the fall, it has been possible to lessen the injury to the cotton crop. The calcium arsenate treatment, by which the insects are poisoned, has proved very effective where it has been used. The young of the pink bollworm, another very injurious insect, live in the seeds of the plant, and in this way are carried from place to place. Great care must be taken in introducing new seeds into any region to see that they are free from injurious insects. The United States Department of Agriculture has made a very careful study of the problem and is doing everything possible to prevent the spread of the pests.

How our country meets the demand for cotton. The most valuable product which our country exports is the cotton raised on the plantations of the southern states. Indeed, the value of the fiber that these states send to Europe is greater than that of all the foods which we export. Why do the manufacturing countries of Europe need to import so much raw cotton as this? First, because Europe produces practically none herself; second, with her dense population and her many cotton mills, her need for cotton is very great. More cloth is manufactured from this fiber by the mills of Europe than by those of any other continent. These mills supply goods for all of Europe, which has a population four times as great as that of the United States. Besides supplying their own people, some of the countries, particularly Great Britain, Germany, and France, export very large quantities of their manufactures to other continents. We can thus see why Europe needs so much raw material. How to secure a constant supply of this valuable raw material, in times of war as well as in times of peace, is one of the important problems of the great manufacturing countries of Europe.

The United States produced in one year more than sixteen million bales and averaged, during a fourteen-year period (1908–1921), a little above twelve million bales, or about one half of the world's crop. All the great cotton-manufacturing countries of

the world except Japan buy the greater part of their raw cotton from the farmers of the United States. Besides the thousands of bales exported to Europe and Japan, our southern states supply practically all the cotton used by the mills of New England and of the South itself. How can our southern states supply the great demand made upon them for this raw material? Look at the map (Fig. 80) showing the production of cotton in the United States and note the large area which produces it. These states lie so far to the south that they have the long, warm season and the right rainfall conditions that cotton demands.



Courtesy U. S. Department of Agriculture.

Fig. 80.

Quality of American cotton. The world looks to America for the larger part of its cotton supply, not only because we produce much but also because our cotton is of excellent quality. Any fiber used for spinning and weaving is more valuable if it is fine and long. *Sea-island* cotton, a long-fiber variety which is raised on small islands off the coast of South Carolina as well as on the mainland of Georgia and Florida, is one of the best grades of cotton in the world and, therefore, is in great demand. Only a small proportion of the American crop is of this variety, and a part of this is sent to Europe, where the finest cotton goods in the world are made. Unfortunately in recent years the boll weevil has proved especially destructive to this fine grade of cotton. Since long-staple cotton makes a strong, durable cloth, it is needed for automobile tires, for balloons, and for the wings of airplanes. To meet the increased demand, *Egyptian* cotton, which is also of the long-staple variety, is now planted on the irrigated lands of our southwestern states. Arizona and Cali-

fornia are now producing considerable quantities of the long-staple variety.

The cotton seed. The cotton seed, as well as the cotton fiber, enables us to supply other countries with many useful articles. The oil obtained from the seed is used in lard compound, oleomargarine, and salad oils, in packing fish, in making soap, and for many other purposes (Fig. 81). Eighty per cent of the cotton-



Courtesy Chamber of Commerce, Fort Worth, Texas.

Fig. 81.—Tanks for storing cottonseed oil at Fort Worth, Texas. How does the use of the seed in the manufacture of oil help to make cotton cheaper?

seed oil produced in the United States is used in making lard substitutes. The *cake* which remains after the oil has been pressed from the seed makes excellent cattle feed and fertilizer. In the early days of the cotton industry, the seeds were carted away from the gins, dumped in large piles, and allowed to decay. Now the value of the seed is one-sixth as great as that of the fiber. Much of the oil cake and meal and many of the substances containing cottonseed oil are exported in large quantities, mainly

to the countries of Europe. The people of these countries need the oil as food for themselves and the cake and meal for their cattle.

Importance of our cotton trade. Since we produce more than one half of the crop of the world, we see that all manufacturing countries must depend upon us for a large part of their supply. England leads the world in the manufacture of cotton goods. At the time of our Civil War, when the southern ports were blockaded, England's supply of raw cotton was cut off. Her cotton mills were idle, and many of her people who were thrown out of work were almost starving. Since that time England has encouraged the raising of cotton in Egypt and India. England now obtains a part of her cotton from those two countries. She is not, therefore, entirely dependent upon one country for raw cotton. In spite of this fact, however, England and all other countries which manufacture cotton goods in large quantities must look to the United States for the largest part of this raw material.

QUESTIONS AND PROBLEMS

1. Why is the cotton plant one of the most useful plants to man?
2. Much of the raw cotton is transported long distances before it is manufactured. Why is this done?
3. Why was it a very long time before cotton came to be used by nearly all the people of the world?
4. In what ways are our southeastern states well adapted to the growing of cotton?
5. Why have Galveston and New Orleans become important cotton shipping ports?
6. How did the invention of the cotton gin affect the amount of cotton raised? Why?
7. How did the invention of machines for spinning and weaving influence the demand for raw cotton? Why?
8. Why does long-staple cotton make stronger thread, yarn, and cloth than shorter fibers? (Pick out the threads in a piece of cloth and see if you cannot answer the question.)
9. Why is the oil from the seeds of great value to-day?
10. How does the raising of cotton affect the commerce of the United States?
11. Why is it better for the farmers of the southern states to raise a variety of crops than to depend wholly upon cotton?

12. Why have many farmers raised other crops since the boll weevil appeared?
13. Why does Great Britain wish to raise as much cotton as possible in her own possessions?

SUGGESTED PROJECTS AND EXERCISES

1. Prepare for your classroom an exhibit of products derived from the cotton plant.
2. On an outline map of the United States shade lightly the cotton-growing states. Locate mill cities of the South by red dots. Draw red railroad lines from plantations to cities. Locate New England mill cities by green dots. Connect with plantations by red railroad lines and blue steamship lines. Locate southern cotton seaports by blue dots. Connect by blue lines with cotton-importing ports of Europe.
3. Trace the story on your map from the cotton in the fields of Georgia to some article of your clothing manufactured from cotton.
4. Make a collection of all labels from packages containing articles made from cotton seed. Notice and locate the cities where these products were made.
5. Plant cotton seeds in flower pots. Allow them to grow until the plants blossom and mature.

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CHAPTER X

OUR VANISHING FORESTS

LUMBER

Our dependence upon lumber. Have you ever thought how important forests are in our lives? Think of all the uses that we make of wood and try to imagine how we could get along without it. This will help us to realize how important wood is and how dependent we are upon it for the ordinary comforts of life. Many civilized countries have nearly used up their forests and have to depend largely upon their neighbors for the lumber that they use. Our forests, though not as extensive as formerly, are still among our most valuable possessions. No country in the world, except possibly Siberia, has finer forests than the United States, and we are the largest lumber producer in the world.

Forest areas of the United States. Woodlands occur naturally on the Coast Ranges bordering the Pacific Ocean, on the Sierra-Nevada and Cascade ranges, in the higher portions of the Rocky Mountains, and in nearly all parts of the country lying east of the one-hundredth meridian (Fig. 82). The prairie country was for the most part treeless when first visited by white men. Trees grow well there to-day, but it is not a forest region. The arid sections are generally treeless. Study your rain map of the United States (Fig. 29), and compare it with the forest map (Fig. 82). Note how closely the areas of good rainfall agree with the forested areas of the country. The lumbering industry is mainly located in seven great areas, as follows:

Northern New England and the Adirondacks. This forest region was the first in the United States to be extensively used, as it was an area near to the early centers of population. The most important trees of this area are the *white pine*, *spruce*, and *hemlock*. The white pine is highly prized for building purposes, but

is becoming exhausted. The spruce makes good lumber for frames of buildings and for boards. It is extensively used for paper pulp. The hemlock furnishes an inferior lumber. Its bark is used for tanning. The hardwoods of this section include the beech, birch, oak, chestnut, and maple. These hardwoods are excellent for fuel, and some of them make fine lumber for floors and other inside work, and for many special uses, such as the manufacture of furniture, carriages, and farm machinery. This

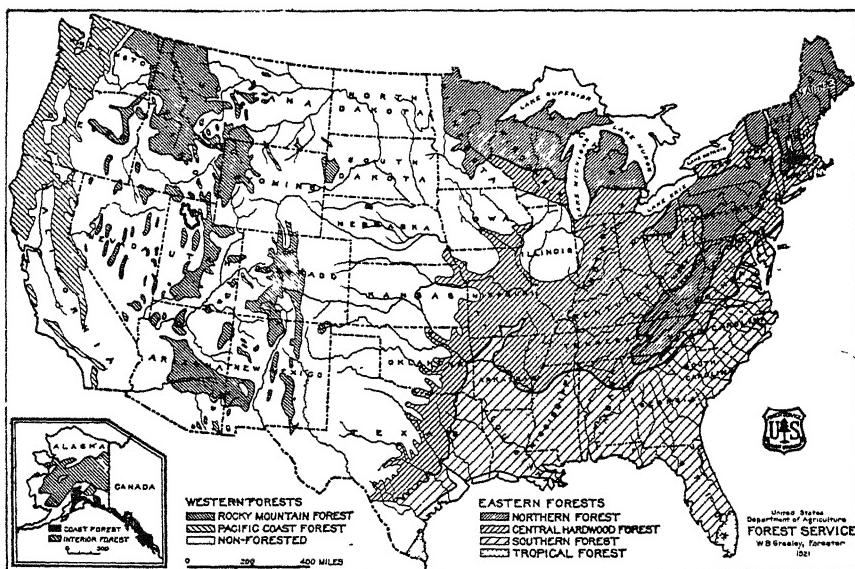


Fig. 82. — Forest regions of the United States.

New England region has been worked so long and so extensively that it is approaching exhaustion and is of much less importance to-day than formerly.

The Great Lakes region. This includes the northern parts of Michigan, Wisconsin, and Minnesota. The trees are similar to those of the New England and Adirondack area. These fine forests have been of great value to the rapidly growing Middle West, and especially to the rich prairie region. In this Great Lakes region the lumber output is also declining, and the more valuable timber is approaching exhaustion.

The Appalachian Highland. This area extends from southern New York to Alabama. It includes the more elevated portions of the highland and furnishes pine, spruce, and hemlock. The region is one of decreasing importance.

The southern forests. The Atlantic and Gulf Coastal Plain bordering the Atlantic and Gulf from New Jersey to southern



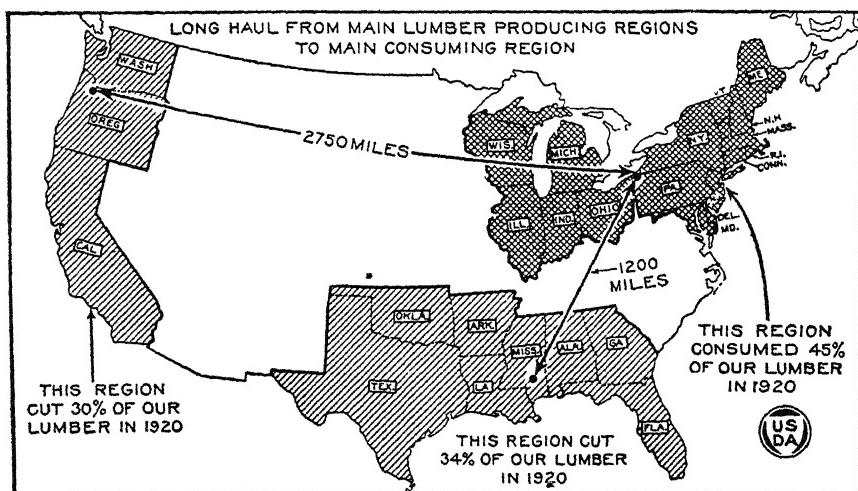
Courtesy of Chamber of Commerce, Texas.

Fig. 83. — Yellow pines in Texas. The trees have been tapped and the men are gathering pitch to make tar, rosin, and spirits of turpentine. Pines like these grow extensively upon the warm, sandy belt of the Atlantic and Gulf states. They furnish the hard pine lumber so extensively used in building.

Texas is a natural forest area. The warm, sandy areas with their moist climate furnish the conditions needed for the growth of the yellow or hard pine (Fig. 83). On the market we hear of this lumber as *Carolina* or *Georgia* pine. This is prized especially for flooring and other inside work. Another important tree of this section is the *cypress*. This grows in the great swamps of the South and furnishes a soft lumber which has many important uses.

This southern forest area is one of great importance, and is now furnishing a large part of the nation's lumber (Fig. 84).

The area of hardwood forests. This region includes an area bordering the Appalachian Mountains (Fig. 82) and reaching westward to the Ozarks and northward to the Great Lakes. It includes such trees as the *black walnut*, *oak*, *hickory*, *chestnut*,



Courtesy U. S. Department of Agriculture.

Fig. 84.—The average rail haul for lumber is increasing with the shift of the cut from the South to the Pacific coast. The Pacific coast states cut 30 per cent of our lumber in 1920 and the Southern states cut 34 per cent. Forty-five per cent of our lumber was consumed in the region east of the Mississippi and north of the Ohio and Potomac rivers.

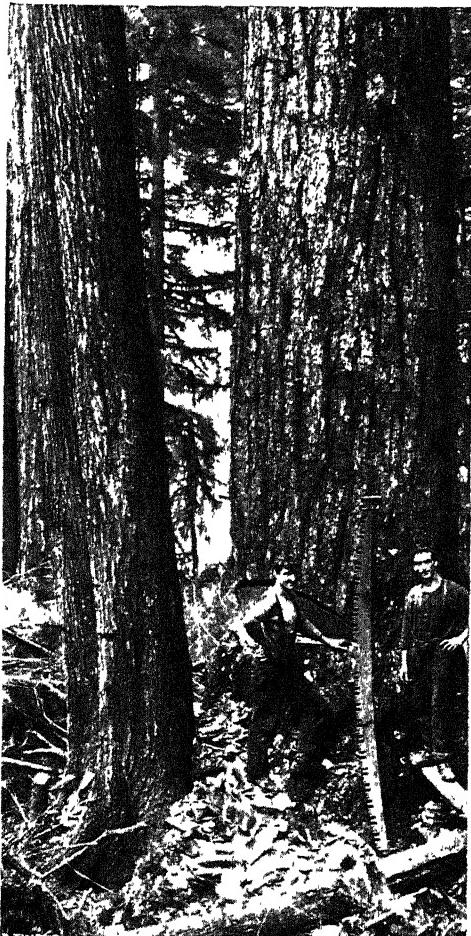
and *ash*. A large part of our best hardwoods comes from this region.

The Rocky Mountain area. Here the forests grow only on the high elevations, where rainfall is sufficient, and are, therefore, in more or less scattered areas. The characteristic trees are the *western yellow pine*, *spruce*, *Douglas fir*, and the *western red cedar*.

The Pacific slope. This area probably contains the most valuable coniferous forest in the world. It occupies the Coast Ranges north of San Francisco, the western slopes of the Sierras and Cascades, and the Willamette and Puget Sound valleys.

This is the region of the California "big tree," the majestic *Douglas fir* (Fig. 85), and the famous *redwood* of commerce. Varieties of pine, hemlock, and cedar are also common (Fig. 86). We hear most about the California big trees, some of which are twenty-five feet in diameter and three hundred feet tall, but commercially the other trees are much more important. The region is one of increasing importance, and the world is looking more and more to it for lumber. Washington leads all other states in the production of lumber (Fig. 87).

Lumber from the Pacific slope finds a market in many parts of the world. Cargoes are taken from the Pacific ports to Japan, Australia, South America, South Africa, and all other countries in need of lumber. San Francisco, Seattle, and Tacoma are great lumber ports. Much is now being shipped both across the continent and through the Panama Canal to supply the needs of the eastern part of the country (Fig. 84).



Courtesy Northern Pacific R.R.

Fig. 85.—Some of the great Douglas firs, which are abundant on the Pacific coast. Lumber from these monster trees is now sent all over the world. Estimate the diameter of the great tree which the lumbermen have begun to cut.

How the forests have been wasted. As a nation we have used our forests with but little thought for the future. The methods employed by the lumbermen have often been very wasteful. Until recent years little attention has been given to saving the forests, or *forest conservation*, as the policy is called. There have

been ever-increasing demands for lumber in our rapidly growing country. The desire to supply the greatest possible quantities of lumber in the quickest and cheapest possible manner has led to the use of methods which have resulted in the destruction of much young and rapidly growing timber that should have been carefully protected.

Great losses have come through fires, especially in regions which have been recently cut over. In such regions the dried tops and branches make excellent fuel for the flames (Fig. 88).

The present rate of

cutting is more than four times the annual growth. If this continues, our forests will be exhausted and our country will suffer a loss that cannot be repaired. This wasteful treatment of the forests has come about in a most natural way, and it will probably be corrected when our people realize what is being done.



Courtesy Canadian Pacific Railway.

Fig. 86.—One of the great cedar trees of Vancouver, B. C. Trees like this are common on the coasts of Washington and Oregon and are very old.

How the forests were treated in early days. When the first settlers came to America, they found forests of great trees everywhere. They knew that if they were to make their homes here they must plow and plant the land. How do you suppose they felt about the forests? Before they could cultivate the land the forests had to be removed. This clearing of land was a laborious process, and it is no wonder that the early settlers failed to appreciate the value of the trees. Their great problem was to get rid



Courtesy Northern Pacific Railway.

Fig. 87.—The states of Washington, Oregon, and California have many forests of great trees. Here are some of the large logs being brought out of the woods for shipment to the sawmills. What is the diameter of these logs?

of them, not to save them. To be sure, they found many uses for the wood and lumber that the forests gave, but there was so much more wood than they needed that they wished to find the easiest ways to destroy the trees. Under these conditions the habit of forest destruction was early developed among our people. It is hard to see how it could have been avoided. Not ten per cent of the original forests of the East remain and nearly half of the virgin forests of the West are gone.

Why conservation is needed. It was not until about the beginning of the present century that our people, because of the high cost of lumber, began to realize that there was actual danger of a lumber famine. There began then a strong movement for the conservation of our forests. In the very regions where the lands had been so laboriously cleared, farmers are now urged to replant the land with young forest trees. It is realized that much



Courtesy U. S. Forest Service.

Fig. 88. — This forest area was burned over about twelve years before the photograph was taken. Notice the thin soil and slow recovery of vegetation. It will be many years before another forest can grow here.

of this land is poor and better adapted to woodland growth than to the raising of cultivated crops. Efforts are now being made in all sections of the land to teach the people how to care for the forests, in order that there may be lumber enough for future needs, and possibly some for our neighbors, who will be sure to need it. With proper care the forests can be made to last indefinitely.

Europe, for many years, has been under the necessity of caring for her forests or becoming absolutely dependent upon other lands for her lumber supply. France and Germany have developed

excellent methods of forestry, and have many important lessons to teach us. Much can be done in our country in reforesting, in caring for trees, in avoiding fires, and in the use of less destructive methods of lumbering.

Many localities are organized to fight forest fires. Lookout stations are built on hills or mountain tops and connected by



Courtesy U. S. Forest Service.

Fig. 89.—This is what happens when the forest is removed from steep hillsides and there is nothing to protect the soil from the wash of heavy rains.

telephone with the organizations whose business it is to fight the fires whenever they break out. Many laws have been made to protect the forests against the careless use of fires. In what ways are forest fires often started by careless people? In many localities a special permit must be obtained before one is allowed to build an outdoor fire. The fact that the people of this country have begun to study seriously all these problems means that our forest resources may yet be saved. Many of our colleges and

universities are now giving courses in scientific forestry and many trained foresters are now in the service.

Our national forest policy. Forests do more than supply us with lumber. Growing upon the steep slopes of hills and mountains, they check the rapid run-off of water, thus preventing the soil from being washed away (Fig. 89). The water which is prevented from running off soaks through the forest litter into the rocks and soil below, thus feeding the springs with water which, in

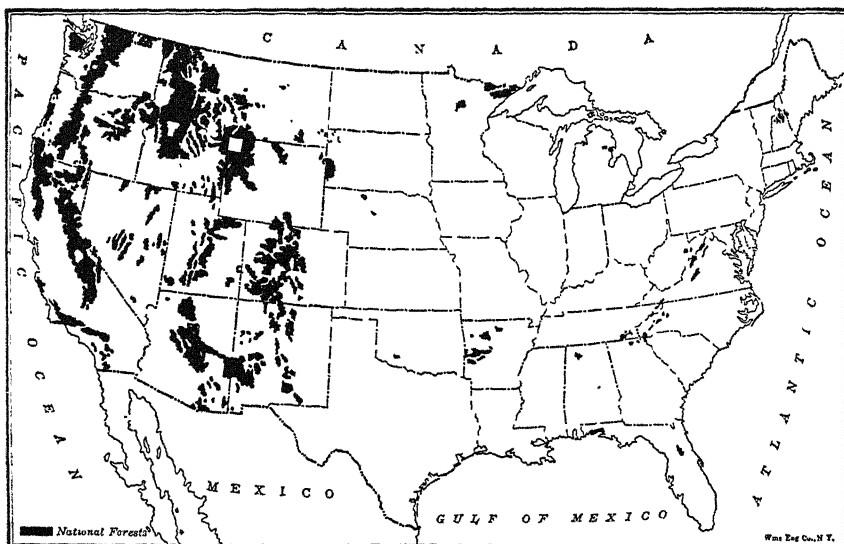


Fig. 90.—National forests in the United States.

time of drought, is doled out to the streams so that their flow is kept even throughout the year. This even water supply in our rivers is important for water power, navigation, and irrigation. Our national government, realizing the great value of the forests and the danger of losing them, has begun a policy of establishing *national forest reservations*. Already vast areas of land in the West, not fit for agriculture, have been set aside as national forests. An area five times greater than New England has been thus set aside (Fig. 90). Most of these reservations are in the West, as most of the public lands are there. Important areas

have been purchased by the government near the headwaters of streams in the Appalachian region and in the White Mountains. These will doubtless be increased in the future. These forest reservations are being carefully guarded against losses by fire, and are otherwise scientifically cared for.

Many of our states are employing *state foresters*, who study



Courtesy U. S. Forest Service.

Fig. 91.—A Utah nursery where seeds of forest trees are planted and carefully tended to provide young trees for planting in the national forest areas. The seedling trees need protection from the hot sun; this is provided by the slats shown in the picture.

the forest problems, instruct the people in matters of forestry, maintain nurseries for the raising of young trees to be used in replanting (Fig. 91), give help to those needing aid in the care of their forest lands, and supervise state forest preserves.

The world's need of lumber. Most of the European nations do not produce enough lumber for their own needs, and this is true in spite of the fact that they practice great economy in its use.

Russia and the Scandinavian peninsula are the largest European producers. Australia, South Africa, Japan, China, and India are unable to supply all their needs, and South America has little valuable lumber other than the tropical woods. All these countries, therefore, look to their neighbors for a portion of their supply. The United States is able to export some lumber to these countries, but our needs are so great that the amount is comparatively small. Our imports just about equal our exports. Our country imports from tropical regions mahogany, cedar, and teakwood. The world needs to know more of scientific forestry, how to make wood last longer, how to use it more economically, and what materials may be substituted for it.

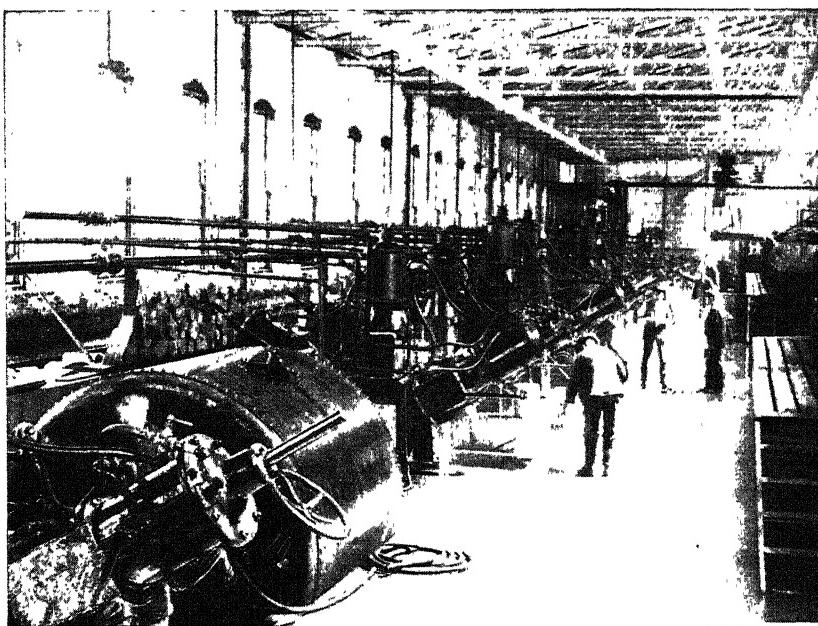
PAPER AND WOOD PULP

How wood pulp is made. The paper used in this book is made from wood pulp. Many other fibrous materials have been, and still are, used for paper making. It is only in the last few decades that wood pulp has come to be the principal material used in its manufacture. For several centuries linen, cotton, and woolen rags were the principal paper-making materials, and our finer grades of paper are still made of cotton and linen.

There are two kinds of wood pulp, *mechanical* and *chemical*. The mechanical is made by grinding blocks of wood on coarse grindstones, making a pulp of the same composition as the wood itself. In the making of chemical pulp the blocks are cut into fine chips, and these are "cooked" in chemicals, which dissolve portions of the wood and reduce it to a pulpy mass. The finer grades of paper are made by the chemical process, and the cheaper grades by the mechanical. The better grades of book paper are made of chemical pulp from poplar wood. Newsprint is generally made from spruce. Practically all kinds of wood can be used for paper making, and many cheap vegetable fibers are used in the manufacture of the poorer grades.

Where wood pulp is made. Three-fifths of the wood pulp in this country is made from spruce. Large quantities of clear water are used in the manufacturing process, and most of the paper mills

are run by water power. The excellent water power and the abundant spruce in northern New England and in the Adirondacks have made these sections the largest paper-manufacturing districts in the country (Fig. 92). Wisconsin is also a large producer. The tendency is to take the mills to the forest rather than the forest to the mills.



© Brown Bros.

Fig. 92. — An interior view of a paper pulp mill showing machines used in grinding blocks of wood into fine pulp for the manufacture of paper.

Our trade in paper and pulp. Our own country ranks first in the production and use of paper. In spite of our large manufactures of pulp we have to look to our neighbors for large quantities of both pulp and paper. Europe sends us many rags for paper. Canada and the Scandinavian peninsula supply us with the largest quantities of pulp, and Germany has sent us much high-grade rag paper. We export moderate quantities of paper to Great Britain, Europe, South America, and Central America.

OTHER FOREST PRODUCTS

Tanning materials. Hemlock and oak barks are used in tanning. These are of less importance than formerly, since many new tanning materials have come into common use. However, our hemlock and oak forests determined the location of many of the great tanneries of the country. Much loss of timber has resulted from the cutting of trees for bark. Millions of fine trees have been cut down and stripped of their bark and the logs left to decay. The new chemical processes of tanning and the new tanning materials are likely to result in much saving to our forests.

Naval stores. Tar, turpentine, and resin are called *naval stores* because of their extensive use in shipbuilding and shipfurnishing. They are products derived from the pine tree. The tar is obtained by distillation of pine wood. When a pine tree is wounded, turpentine comes from the wound. This turpentine, when distilled, gives spirits of turpentine, and what is left is resin. The pine forests of the coastal plain of our southern states furnish about nine-tenths of the world's supply of these materials (Fig. 83). The severe wounds given the trees in obtaining the turpentine cause them to die in a few years. The forests have therefore suffered much from this treatment. New methods are being devised which are expected to reduce the injury to the trees. Charleston, Savannah, Pensacola, and Mobile are important shipping centers for these products.

QUESTIONS AND PROBLEMS

1. The early settlers of New England found many forests. The pioneers of the prairie country found none. Which were the more fortunate? Why?
2. How have the prairies and the cities on the Great Lakes depended upon forests? Which forest region has been most useful to them?
3. How do the forest industries of the southern states differ from those of the northern states?
4. Why have forests decreased as our country has grown? How has this affected the supply and the price of lumber? How will it be in the future?
5. How do forests help to keep the rivers well supplied with water even when the season is dry?

6. Find out four ways in which the forests may be conserved. How can you help in this conservation?

7. Why should a part of your father's tax go to help pay the salary of a state forester?

8. Why are mountainous regions generally well forested? How may they permanently lose their forests?

9. What lessons can Americans learn from Germany and France in relation to the care of forests?

10. Why do Canada, Norway, and Sweden send us wood pulp?

11. Oregon sends much lumber to the Atlantic states. What kind is it? Why should these states buy lumber from Oregon?

12. What are the laws of your state regarding "permits" for building outdoor fires?

SUGGESTED PROJECTS AND EXERCISES

1. Make a collection, for classroom exhibit, of as many articles as possible made of paper. Why is paper used for these articles? Out of what material is the paper for each article made?

2. Make a list, or if possible a collection, of articles which come from the sap of trees.

3. On an outline map of the United States color or shade the forest areas. Print their names.

4. Make a collection of pictures showing lumbering scenes, transportation of logs, sawmills, paper mills, gathering of turpentine, etc.

5. On an outline map of the world trace with blue lines the routes of lumber freighters from our Pacific coast to ports of Japan, Australia, South America, and South Africa. Print the names of ports.

6. Tell the story of your desk. Of what kind of wood is it made? Where did the wood grow? Where was the desk made? What is the varnish, and where did it come from?

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CHAPTER XI

FOOD FROM THE SEA

Early fishing in American waters. All along our New England coast are found old Indian shell heaps. It is interesting to dig into these to see the variety of shells and bones that are found there. These mounds are the old refuse heaps of the ancient Indian camps. A study of their contents shows us that the Indian was a lover of sea food and knew well many of the kinds that we have learned to prize most highly.

The New England colonists were fortunate in having at their very doors such an abundant supply of wholesome food as was found in the near-by ocean. They began very early to make use of this supply, and fish became one of the earliest and most important articles of commerce. Even before the founding of the New England colonies, the people of Europe had learned of the excellent fishing grounds off the northeastern coast of the continent. They had sent their fishing fleets across the ocean in search of cod and haddock, which were very abundant off the shores of Newfoundland and Canada. This region still remains an important fishing ground for both America and Europe. In the history of our country many difficult international questions have arisen regarding the fishing privileges in these waters. Such questions have usually been settled by international agreement.

Fishing rights. Nations have agreed that a country has control of the waters for three miles off its coast. Beyond that limit people of any nation have a right to use the waters for fishing, commerce, naval operations, or other purposes unless otherwise agreed by treaty. While the people of foreign nations have this right to fish in the waters near the coast, they have not the right to land and sell cargoes or to come ashore for bait, wood, water, or drying of fish. Such matters are generally arranged by treaties.

These needs have given rise to many troublesome questions between our country and Great Britain and Canada, since the Canadian shores lie near the fishing grounds. These nations, however, have learned that, if they are to live peaceably as neighbors, each

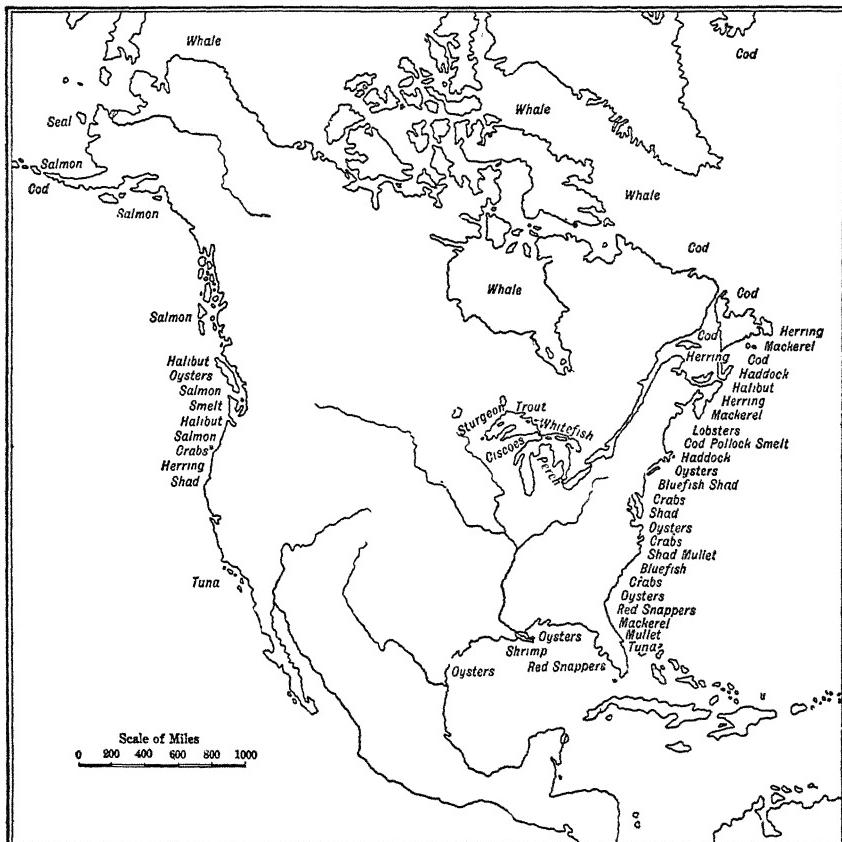


Fig. 93. — Map showing the approximate location of some of the most important fisheries of North America and the leading fish taken.

must respect the rights of the other and be reasonable in insisting upon its own rights.

The ocean as a food area. From the earliest time to the present, man has used the ocean and its shore as an area for the supply of food. For generation after generation he has drawn

upon its vast resources, and one might think the supply of food would be nearing exhaustion. This might be true were it not for the fact that fishes multiply with great rapidity. A single cod produces many thousand eggs each year. The same is true of other kinds of fish. This is one of Nature's ways of preventing extermination, for fishes have many enemies besides man. The great majority of the little fishes, hatched from this great number of eggs, furnish food for the larger fishes of the sea. In spite of this, enough are left to keep the sea well populated and to supply the needs of man. If man properly protects this natural food supply, the ocean will remain for an indefinite period an important food-producing area.

Where fish are taken. Fish are generally taken on their feeding grounds or on the way to their spawning grounds. Life in the sea is most abundant along the margins of the continents (Fig. 93). The great fisheries of the world are located upon the continental shelves. The water over these areas is always comparatively shallow, even though they extend far from shore. They furnish the best feeding and spawning ground for great numbers of fish. Some fish feed at the bottom of the ocean and are spoken of as *ground fish*. Cod, haddock, and halibut are the most important of this class. Other fish have the habit of "schooling" near the surface and are taken there. The mackerel, bluefish, and menhaden are among the most common fish of this group. Several kinds have the habit of leaving the ocean at spawning time and swimming up the rivers to fresh water, perhaps to the upper part of the river or to a lake or pond from which it flows. Great numbers of fish crowd up the streams at this time and can be taken easily and with but little expense. The great salmon fisheries of the Pacific coast (Fig. 94) are often located upon such streams, as the salmon has this habit of spawning. The herring and shad are also of this class.

How fish are used. Fish not only give us an abundance of relatively cheap and wholesome food, but they furnish other important products as well. The leather industry of our country uses large quantities of fish oil in the finishing of leather. The menhaden, or pogy, is taken mainly for this purpose (Fig. 95).

After the oil is taken from fish, what is left is known as *scrap*. This is used in the manufacture of commercial fertilizers. The scrap is also refined and used in the manufacture of *fish meal*, which is a valuable food for animals. Scrap is also made from



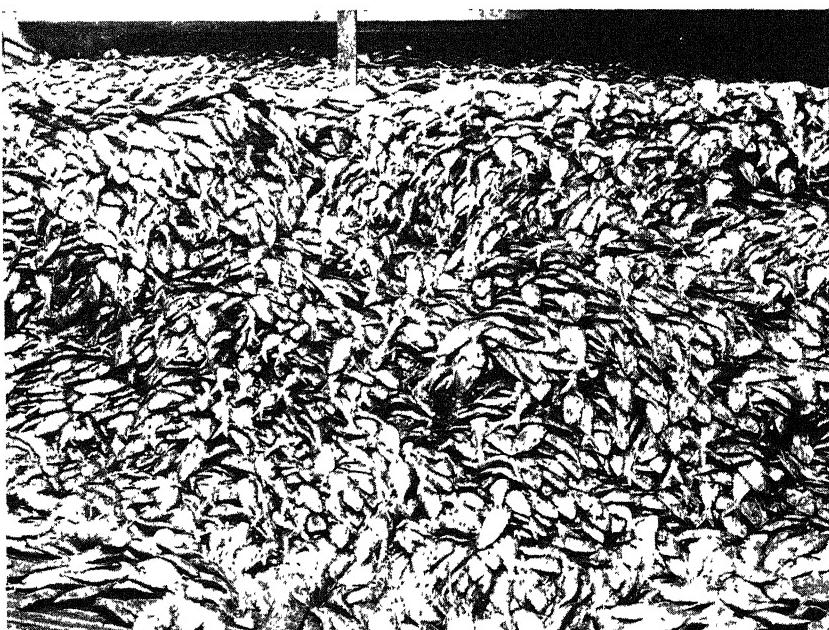
Courtesy Seattle Chamber of Commerce.

Fig. 94.—Salmon are taken in nets by the boatload from the rivers that run into the Pacific. When the fish are canned in near-by factories, they make an excellent food which can be kept for a long time and may be shipped to any part of the world.

the refuse of the canning factories. Glue is another by-product, and the skins of sharks and other fish are even used for making leather. Whalebone and sperm oil are products of the whaling industry.

How fish are preserved. *Freezing.* Fresh fish are often frozen by an artificial process and when frozen may be kept for an in-

definite time in cold storage (Fig. 96). By the use of refrigerator cars and cold-storage steamers they may be shipped to any distance. Throughout the year fresh fish may therefore be obtained in the markets of our own and other countries. Hotels in inland cities, like Chicago and St. Louis, are able to serve fresh sea food upon their bills of fare. Fish packed in ice will keep for several



Courtesy U. S. Bureau of Fisheries.

Fig. 95. — From this great catch of menhaden, oil and fish scrap are being manufactured. These fish are taken in large numbers along the Atlantic coast from Cape Hatteras to Nova Scotia.

days, and fishermen often use this method in getting their catch to the market.

Salting. Most fish reach the market to-day as fresh fish, but some are preserved by salting. Cod and haddock, when taken a long distance from the market, are often preserved in this way. When a cargo of salted fish reaches port, the fish are taken from the brine and dried either out of doors on racks, known as *flakes* (Fig. 97), or in the drying rooms of the factories. Thus preserved,

they are sold as salt fish and are often put up as shredded or boneless fish. Other kinds, like mackerel or herring, are salted but not dried, and are sold from the brine.

Smoking. Many kinds of fish, as salmon, herring, and halibut, are salted and smoked. The smoked haddock is sold as finnan haddie.

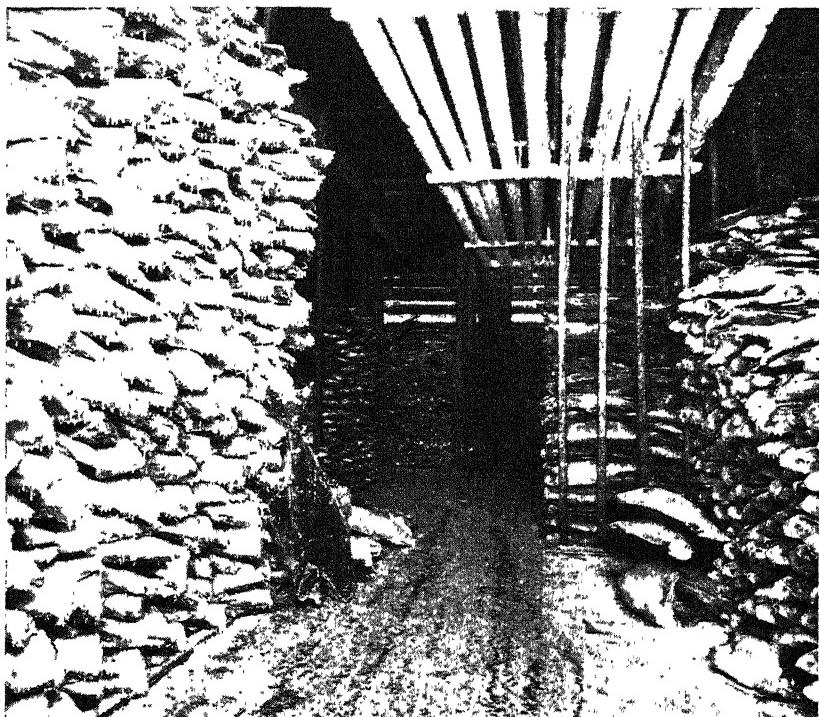
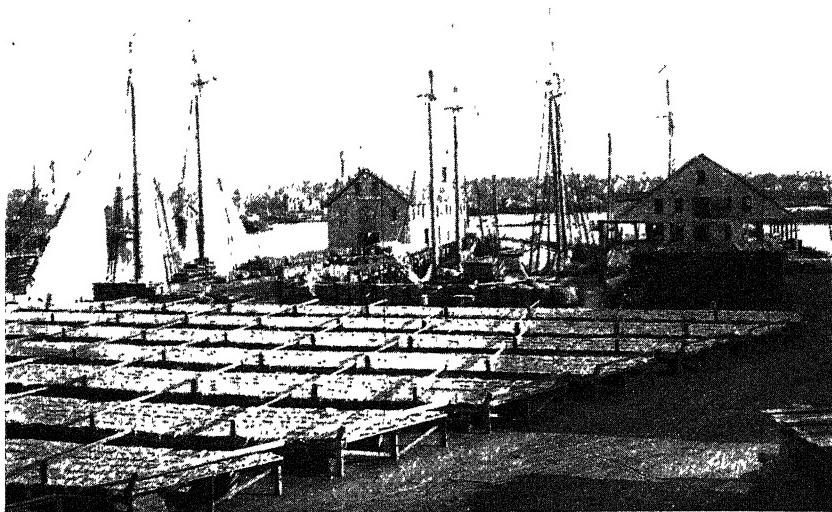


Fig. 96.—Thousands of tons of salmon, sole, halibut, herring, shrimp, crabs, oysters, and other sea foods are marketed through Seattle from Puget Sound and Alaskan waters. Here is shown some of the 4,000,000 pounds of frozen halibut in cold storage awaiting shipment to Eastern markets.

Canning. The canning of fish has come to be a very large industry. Salmon, tuna, and sardines are commonly preserved in this way. Many kinds of shellfish are also canned and shipped long distances.

The New England fisheries. On the continental shelf off the New England and Canadian coasts are many shallow areas known

as *banks*, which are excellent feeding grounds for fish. The Grand Banks of Newfoundland are among the most famous in the world. From the earliest days New England has used these different banks as fishing grounds, and this section was for many years the leading fishing center of our country. The industry in the early days greatly encouraged shipbuilding, and many hardy sailors have had their training on the fishing vessels of New England.



Courtesy U. S. Bureau of Fisheries

Fig. 97.—Drying salt cod at Gloucester, Massachusetts. The little vessels at the wharves have brought these salted fish either from the Grand Banks of Newfoundland or from the nearer banks of New England. At Gloucester they are dried and prepared for market.

These sailors have played an important part in all our wars and in the development of our commerce on the seas. New England is not extensively engaged in canning but is a very large market for fresh fish (Fig. 98). The dried salt-fish industry has nothing like the importance that it had in the days before refrigeration and canning. Gloucester does most of this work at present. Many lobsters are taken along the coast. Boston is the largest

fresh-fish market of New England. Portland and Provincetown are also important fishing centers.

Fisheries of the coast south of New England. In the supply of the great staple varieties, including the cod, haddock, halibut, hake, herring, mackerel, and lobster, New England still stands first. The Atlantic coast south of New England now surpasses New England in the total value of its fisheries. Great numbers of menhaden, squeteague, bluefish, shad, and mullet are taken, and the region is by far the greatest producer of oysters (Fig. 99). These are found in great abundance, especially in Chesapeake Bay. Large crabs abound in the southern waters and are extensively canned and shipped to all parts of the country.



Courtesy U. S. Bureau of Fisheries

Fig. 98.—Here is a shipload of mackerel just landed at the wharf. The men are splitting and salting some of them. Many will be packed in ice and sold to the markets for immediate use as fresh mackerel.

Fisheries of the Gulf states. The fisheries of the Gulf coast are not very fully developed. The area is fast becoming important, owing to improved methods of refrigeration and transportation. The mullet, red snapper, and several other important food fish abound, and the canning of shrimps is an important industry.

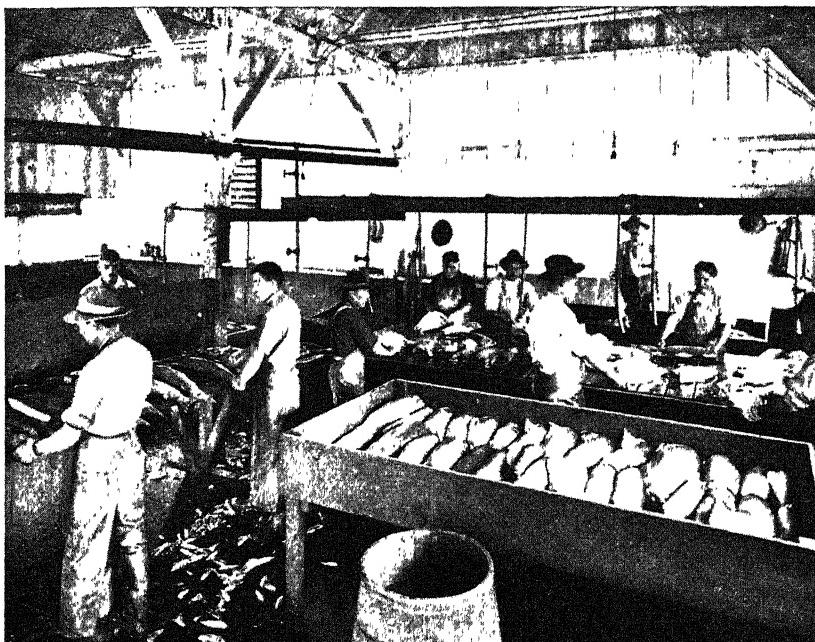
Fisheries of the Pacific coast. The cod, halibut, herring, and other cold-water fish abound in the northern waters and are taken extensively by the people of the Pacific states. To-day a large part of the halibut used in the Atlantic states comes from the Pacific coast. Salmon are by far the most important fish



Fig. 99.—Hundreds of these little boats are engaged in tonging oysters in the Chesapeake Bay. By means of the long-handled "tongs," oysters are scooped up from the bottom and placed upon the culling board in the middle of the boat, where they are carefully sorted. Only those of proper size are retained for sale. Many oysters are taken in dredges which are dragged along the bottom by power boats.

of this region. As we have seen, they are taken in vast numbers as they swim up the rivers to the spawning grounds. Many of these are taken in Alaska. In a single year the salmon taken in Alaska amounted to \$51,000,000. The salmon are canned (Fig. 100) in numerous factories in Alaska and the states, and are sent to all sections of our own country and to many other parts of the world.

Fisheries of the Great Lakes. Our fresh-water fish, although important, are not nearly so valuable as those of the ocean. The annual catch from the Great Lakes has a value just about equal to that from the Gulf. The most important fish taken from the Great Lakes are the cisco, trout, and whitefish.



Courtesy San Francisco Chamber of Commerce.

Fig. 100.—Interior of a cannery on the Klamath River, California. The men are at work cleaning the salmon in preparation for the canning process.

The fur seal. The Pribilof Islands, owned by the United States, are the great breeding grounds for these animals and the most important region for their capture (Fig. 101). The seals are so valuable and so much sought after for their fur that there is danger of their extermination. The United States, therefore, regulates the conditions under which they may be captured upon these islands. The seals spend much of their time in the open sea, where many thousands have been captured every year far away from their breeding grounds. Our country, Japan, Russia,

and Great Britain in 1911 entered into a treaty agreement not to take the seals in the open ocean, as the process is very destructive to seal life. These nations realize that the policy is for their common advantage and have agreed to a division of profits from the seals killed on land. This is a fine instance of neighborly coöperation among nations.



Courtesy Seattle Chamber of Commerce.

Fig. 101. — A herd of fur-bearing seals upon their breeding grounds on the Pribilof Islands in the Bering Sea. The big seal, at the right, is the ruler of the herd and is a tyrant in his method of governing.

Government protection of fisheries. States regulate the season at which certain kinds of fishing may be done and the size and number of fish to be taken. The United States has established a Bureau of Fisheries to promote the industry in every possible way. Realizing the danger of exhausting the supply of certain kinds of fish, the United States maintains government hatcheries. Here the young of many commercial varieties are hatched and

widely distributed in the best producing areas. Many millions of these little fish are distributed annually. States also maintain hatcheries especially for fresh-water fisheries. The Bureau also studies and reports to fishermen the best methods of taking, preserving, and shipping fish. It studies the food value of different kinds and undertakes to introduce unfamiliar kinds to the public.

Fish in commerce. Our need of food is so great that we consume practically all the fish that we catch. Our imports are usually greater than our exports. We send abroad some of our many kinds of canned goods, especially the salmon. Canadian fish come to us in large quantities. As an article of foreign commerce, however, fish are relatively unimportant in our country. The industry itself is not great as compared with some others, but it supplies important needs and stimulates many other activities. Italy, Spain, Portugal, and Latin America are the important fish importing countries. These obtain their supplies from all parts of the world, the United States furnishing its share.

QUESTIONS AND PROBLEMS

1. Why have Canada and the United States often had questions relating to fishing privileges to discuss? How have they generally been settled?
2. Where are America's most important fishing grounds? What kinds of fish are most abundant on each?
3. How does it happen that, with the great numbers of fish taken from the sea, the supply is not exhausted? What can be done to prevent extermination?
4. Why are salmon fisheries located on rivers? Locate the most important of these fisheries.
5. How does fishing help the leather industry? Farming? Shipbuilding? Commerce?
6. How do many Gloucester fishermen lose their lives on the Grand Banks?
7. In what different ways are fish preserved?
8. How has cold storage affected the fishing industry?
9. What is the most important kind of fishing on the Pacific coast?
10. What is meant by the shellfish industry? Where located?
11. How does it happen that the people of Chicago can have fresh oysters, clams, lobsters, and cod?
12. How have Japan, Russia, Great Britain, and the United States shown themselves good neighbors in handling the seal fisheries?

13. What kinds of fish do you buy that are — fresh, salted, smoked, or canned?
14. Why were the New England fish especially important to the early colonists?
15. What are *banks* in the ocean, and why are they important fishing grounds?
16. How important are the Great Lakes for fishing?

SUGGESTED PROJECTS AND EXERCISES

1. Collect labels on cans of fish obtained at the stores. Make a list of the kinds. On an outline map locate the place from which each comes. Print the name of the fish for each locality.
2. Appoint a committee to report as to whether the Atlantic or Pacific coast fisheries are the more profitable.
3. Write the story of a package of shredded codfish.
4. Make a collection of products derived in whole or in part from the fishing industry.
5. Write a story entitled "The Adventures of a Salmon on the Way to the Spawning Ground."
6. Make a study of the different ways of taking fish and illustrate by pictures and diagrams.

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CHAPTER XII

OUR GREAT MINERAL WEALTH

COAL AND IRON

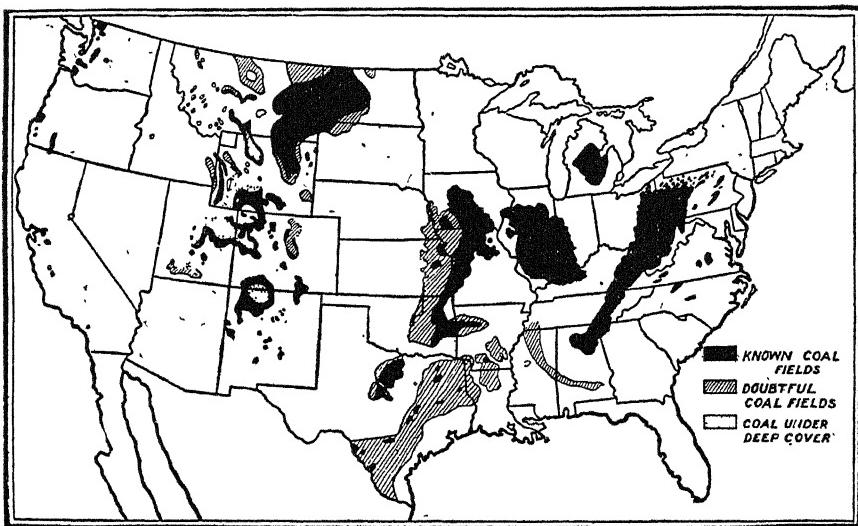
The great importance of these minerals. The world has made its greatest progress in industry and commerce during the past century. This has been due in largest measure to the extensive use that man has learned to make of coal and iron. Iron has made possible the building of great quantities of machinery for our many factories, the great steamships engaged in commerce, and the rails and locomotives of our extensive railroad system. Coal has made possible the extensive smelting of iron and has furnished the steam power needed in modern industry and commerce. What other uses of coal can you think of? Our own country is extremely fortunate in having a very large supply of both of these useful minerals. We rank first among the nations of the world in the production of both coal and iron. Great Britain and Germany are our closest rivals.

Steel is a special form of iron which has become very important in modern life. Iron and steel will be further discussed in a separate chapter.

Kinds of coal. When vegetable matter first accumulates in the bottom of swamps and marshes, it is known as *peat*. This is coal in its earliest stages and is found in many of our swamps of to-day. In Ireland this is the most abundant fuel at the present time. In the peat bogs of Ireland logs are often found so well preserved that they are sawed into lumber of excellent quality. When peat has been subjected to considerable pressure for many centuries, it gradually changes to brown coal, or *lignite*. This shows much woody structure. When the lignite is deeply buried and subjected to much more pressure for a very long time, it becomes *bituminous* coal. This is generally known as "soft"

coal. Still more pressure changes the bituminous coal to *anthracite*, or "hard" coal.

Areas of coal production. Study Figure 102 to learn of the distribution of coal in the United States. Most of our coal is bituminous. There is a small but important area of anthracite in eastern Pennsylvania. This is the only important anthracite area in the United States, but it supplies all of the hard coal for the eastern half of our country. Anthracite is especially valuable for domestic use. Bituminous coal is produced in con-



Courtesy U. S. Geological Survey.

Fig. 102. — Map of the coal fields of the United States.

siderable quantities in thirty-one of our states at the present time. The Appalachian region produces more than seventy per cent of the nation's coal. There are large quantities of lignite in the western half of the country. Few places in the United States are more than five hundred miles from a coal field. This is a matter of great importance to commerce and industry. Can you show how this is true? How has coal influenced the development of agriculture?

Our large supply. The United States has more coal of high grade than any other nation in the world. Since the beginning

of the present century we have led the world in coal production (Fig. 103). In 1922 our production was 452,138,751 tons. We generally produce about thirty-eight per cent of the world production. It is estimated that there are nearly a billion tons of lignite which can be mined in the future, and there are still larger quantities of bituminous coal reserves.

Why we should conserve our coal. Although our supply is enormous, it is limited, and the amount required for use is increasing at a rapid rate. It is estimated that we have now used about one per cent of our total coal supply. With ninety-nine per cent still available one may say there is no cause for anxiety. There certainly is none for the present generation, but how about the future? The written history of the human race reaches back

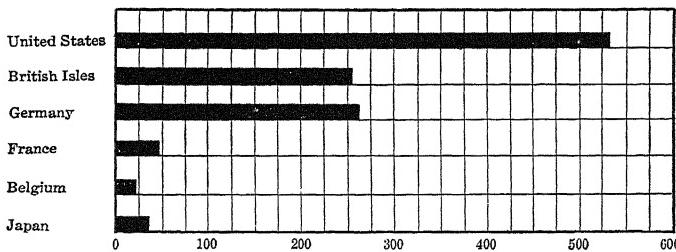
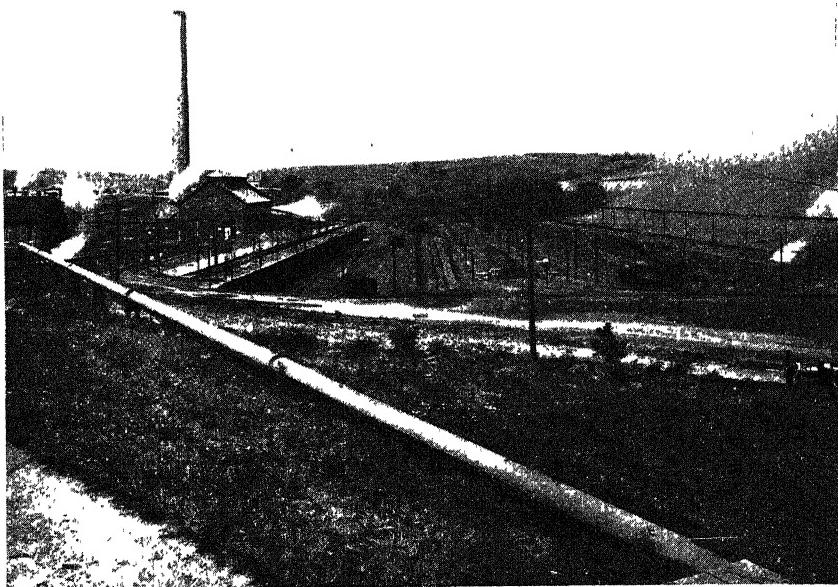


Fig. 103. — Coal production by countries in millions of tons, 1925.

for more than six thousand years. We hope for a future much greater than the past. Have we no responsibility for the generations yet to come? It is the part of good citizenship to conserve our coal so as to make it last as long as possible. No one can say how long that will be. We must reduce the present waste in mining and the great losses which come as a result of wasteful consumption. We ought, so far as possible, to find substitutes for coal.

One great saving seems possible in the near future. Our great industrial plants and railroads can be most economically operated by electricity supplied by central plants which may be run either by steam or water power. Electricity thus generated can be economically transmitted and used as power for a distance of at least two hundred miles. The central plants to be run by steam

would naturally be located, as often as possible, near the coal mines. This would save the transportation of vast quantities of coal for long distances. Such an arrangement would do away with the expensive method of keeping a separate fire for each locomotive and factory engine. The use of water power in the production of electricity would save great quantities of coal.



Courtesy H. C. Frick Coke Company.

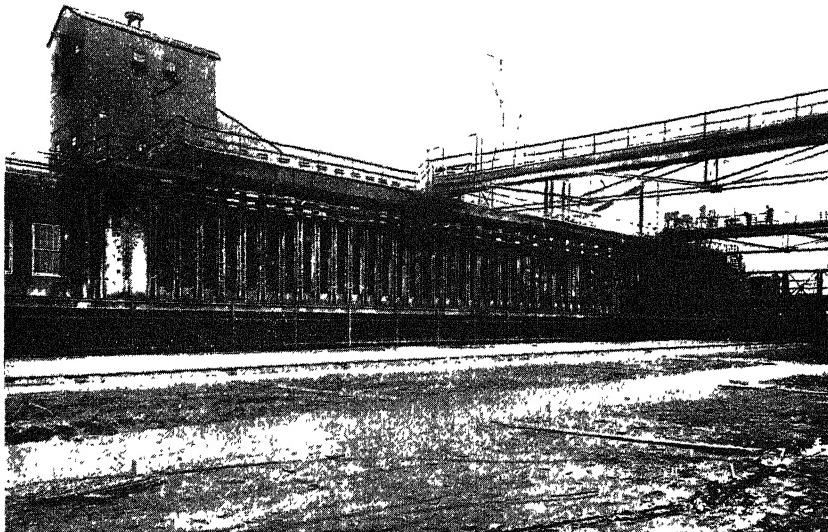
Fig. 104.—Old beehive ovens. When these are used for making coke the gases and by-products are lost, as shown at the right in the picture.

Water power will last as long as rain falls and rivers run, but coal when once used is gone forever.

How the nation is using its coal. Although our production is enormous, we export but little coal. Can you see any reason for this? The small amount that we do export goes mainly to Canada, Mexico, and the West Indies. Much the largest part

of our coal is used in the production of steam for railroads, steam-ships, and the industries. Only about one-sixth is used in our homes for heating. Much is also used in the manufacture of coke (Figs. 104 and 105). Find out how coke is made.

Dependence of industry upon the coal supply. Our great supply of coal has done much to develop our manufactures. It would seem to indicate that the United States is sure to continue



Courtesy U. S. Bureau of Mines.

Fig. 105.—Modern by-product coke ovens for the manufacture of coke from soft coal, so designed as to save the gas and other by-products such as tar, oil, dye stuffs, medicinal products, ammonia, and explosives.

as a great industrial and commercial nation, as it is also rich in raw materials. It is interesting to note that the two most progressive regions of the world, western Europe and north-eastern United States, are the two regions of largest coal production. These regions also supply the other parts of the world with most of their manufactured goods and carry on the larger part of the world's commerce. In what ways do you think that coal has helped to bring this about?

Great Britain, Germany, and Belgium are the largest coal-producing nations of Europe. Great Britain is said to have more coal in proportion to her area than any other country of the world.

This is undoubtedly one reason why she has become such an important commercial nation.



Courtesy National City Bank, N. Y.

Fig. 106.—Drilling an oil well in Java. As the well is bored, a pipe is driven into the ground which prevents water from entering and mixing with the oil.

then made of the oil, or *petroleum* as we now call it, although in some cases it was bottled and sold as medicine.

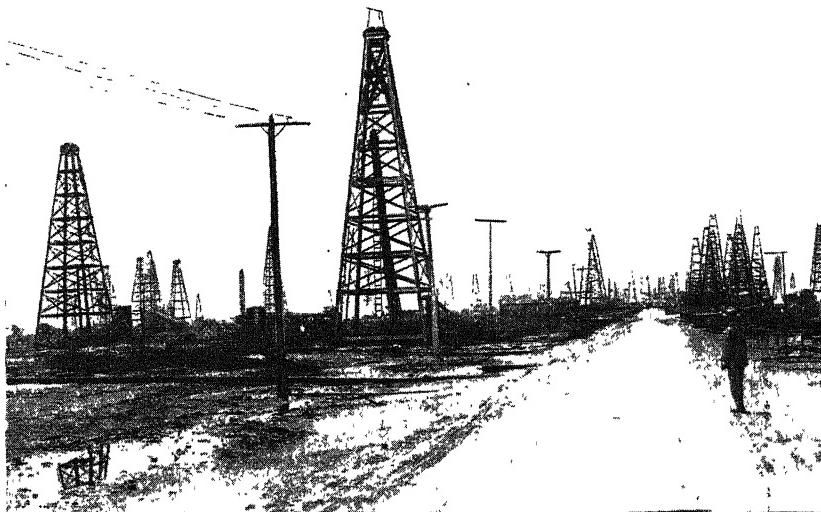
The first methods used to obtain petroleum are interesting. Blankets were laid upon the ground until they had absorbed the

PETROLEUM

Discovery of petroleum in the United States. The early settlers in parts of New York and Pennsylvania noticed an oily substance oozing from the ground. In some places care had to be taken to keep the springs free from oil so that the water might be fit for the cattle to drink. In this same region are large deposits of salt. As wells were drilled for salt, oil came into the wells and caused much trouble. Indeed, some wells produced more oil than brine. Little use was

oil. They were then taken up, and the oil squeezed out of them. Oil was also obtained by skimming it from the surface of the water. Pits were dug, in which the oil collected as it came to the surface.

Oil obtained by drilling wells. Gradually the people learned to use petroleum for illumination and then for lubrication. As time passed it was discovered that petroleum could be obtained more easily and in larger quantities by boring or drilling into the earth than by the simpler means already mentioned (Fig. 106).



Courtesy Chamber of Commerce, Beaumont, Texas.

Fig. 107.—One of the great Texas oil fields. Some wells are only a few hundred feet deep, while others are nearly a mile and a half in depth. Thousands of dollars may be spent in drilling a deep hole in the ground from which oil is never obtained.

As the demand increased, it was quite natural that wells should be bored in regions which showed signs of oil. Drilling a well often costs thousands of dollars. Therefore much time and money are lost if oil is not found. Some wells yield such a small amount of oil that it does not pay for the cost of drilling. Others produce quantities so large that the return on the investment is enormous (Fig. 107).

Petroleum products and their uses. The oil as it comes from the earth is known as *crude petroleum*. By heating it at different

temperatures the lighter products, such as gasoline, benzine, naphtha, and kerosene, are vaporized and separated. The heavier liquid which remains is used for fuel and lubricants. The process of separating these products is known as *refining*. There are several hundred useful products obtained through the refining processes. Among these are paraffine, vaseline, and tar.

Some of the most useful products of petroleum were once considered worthless. Before the invention of the gasoline engine most of the gasoline was allowed to run to waste. Now gasoline is the most valuable product. Paraffine, too, was formerly thought to be of no value until a workman suggested it be made into candles. Kerosene, as you well know, is used for lighting purposes and is sometimes used in place of gasoline in tractors. Many steamships, including large ocean liners, now burn petroleum instead of coal. Some steamers running between the United States and Japan burn petroleum on the trip from San Francisco to Japan and coal on the return trip. This is because on the Pacific coast of the United States petroleum is cheaper than coal since coal is very scarce, while in Japan coal is cheaper than petroleum. Locomotives in the western and southwestern parts of the country also use this kind of fuel.

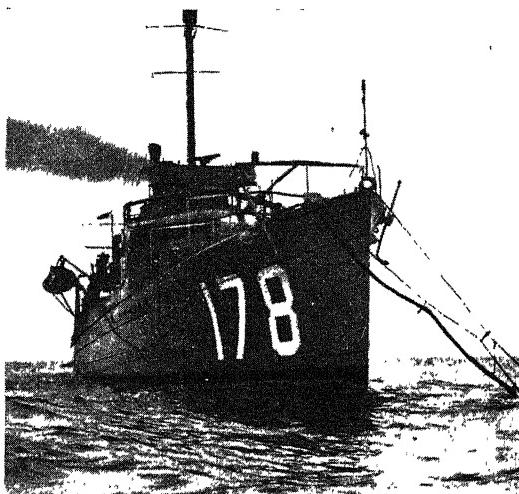
Many of the new ships in the United States navy burn oil (Fig. 108). Already ninety per cent of the ships of the British navy are oil-fired. Oil tanks require less room than coal bunkers; and as the oil is fed to the fires through pipes, less labor is needed. Greater speed can also be obtained when oil is used as fuel, as it gives a more steady heat than coal. It is plain to be seen that in countries using machinery much gasoline, fuel oil, and lubricating oil are needed. In other countries the product most needed is kerosene, which is used for lighting purposes.

Petroleum found in many parts of the United States. The first successful petroleum well in the United States was sunk in Titusville, Pennsylvania, in 1859. From this well forty barrels of oil were pumped the first day. Pennsylvania and New York produced, for the year 1859, two thousand barrels of petroleum. The next year the output of those two states was two hundred fifty times as great. They produced their greatest amount of oil

in 1891; since that time their production has steadily declined. Fortunately other rich fields have been discovered in this country. At the present time California, Oklahoma, and Texas, with about equal production, produce a very large part of the total output of the United States, while New York and Pennsylvania together produce less than three per cent. Other oil-producing states are Arkansas, Illinois, West Virginia, Ohio, Louisiana, and Kansas.

A remarkable oil well in Mexico. One of the greatest oil wells of the world was drilled near Tampico, Mexico, in 1908. When the well reached a depth of 1800 feet, oil under tremendous pressure was struck. The ground trembled and cracks were formed in the earth for a distance of 250 feet from the well as the oil rushed out. One of these cracks opened under the boiler of the engine, setting the gas and oil on fire. The oil burned for fifty-eight days, consuming in that time about 3,000,000 barrels of oil. The flames

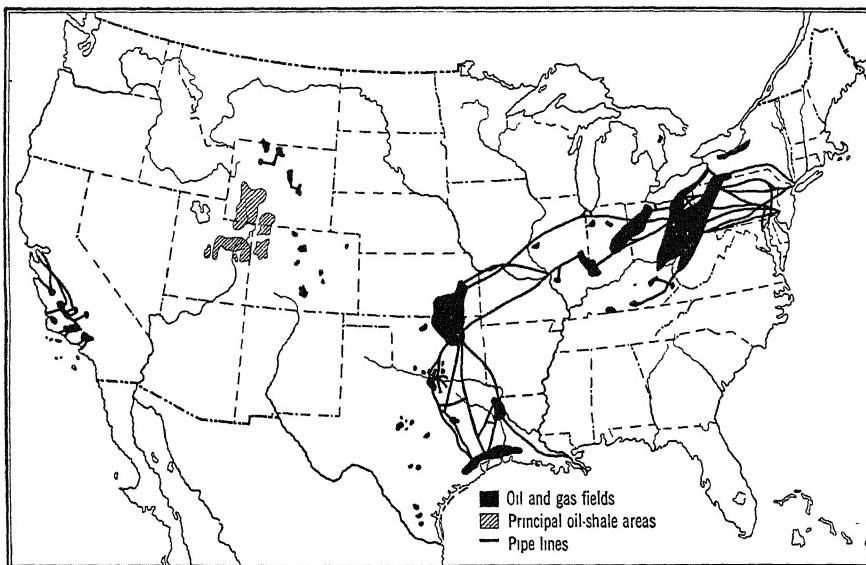
reached a height of nearly 1500 feet. So bright was the light that a newspaper was read by it at night at a distance of more than eleven miles. The fire was put out by pumping sand into the opening of the well. The oil continued to flow so rapidly that it could not be put into barrels. Embankments of earth were thrown up, and in this way a large reservoir was formed in which the oil was stored.



Courtesy U. S. Navy Department.

Fig. 108.—An oil-burning ship of the United States Navy is receiving a supply of oil from a tank steamer near by. The oil is being pumped from one ship to another through the pipe which sags below the surface of the water.

How the oil is transported. In the early days of the petroleum industry the oil was transported from the wells to the refineries in barrels. Some of the crude petroleum is now carried in tank cars, but nearly all of the unrefined oil is transported through iron pipes. These pipes are from two to twelve inches in diameter and are usually placed underground. The pipes often extend across the country for hundreds of miles (Fig. 109). The oil is forced through the pipes by means of powerful pumps. The



Courtesy Joseph E. Pogue.

Fig. 109. — Oil fields and pipe lines of the United States. Note the great distances over which the oil is piped.

pumping stations are from fifteen to thirty miles apart. A series of pipe lines connect the wells of Oklahoma with refineries on the Atlantic coast and on the Gulf of Mexico.

One of the largest refineries in the world is at Bayonne, New Jersey. This refinery uses oil produced in the central part of the United States. The oil is transported the entire distance through pipes. Many of the large refineries are in the eastern part of the United States near large markets for petroleum products. From this part of the country, too, the crude oil and its products

can be easily exported through the ports of New York and Philadelphia to foreign countries.

In recent years it has been difficult to obtain enough freight cars to carry goods between the Middle West and the Atlantic coast. It is fortunate that the great quantities of petroleum can be carried through pipes and thus leave the railroads free to transport other products.

Oil is usually shipped across the Atlantic in tank steamers. A fleet of these steamers runs from New York and Philadelphia to English and German ports. Kerosene is shipped to the Far East in tin cans. It has been found that there is less leakage from cans than from barrels. Moreover, the small cans make it easy to distribute the oil to the consumer.

The supply of petroleum is limited. The supply of oil in any region is limited. Wells are constantly giving out, and new fields are eagerly sought. How long will our oil fields produce all the oil we need and give a surplus for export? This is a particularly important question, since the demand is increasing year by year at a tremendous rate. In some parts of the world, as in Scotland, where petroleum cannot be obtained by drilling wells, oil is obtained by heating an oil-bearing rock which occurs in large quantities. Great masses of such rocks are found in the western part of our country. These rocks are likely to become important sources of oil in the future.

The United States the leading petroleum-producing country. The United States takes first rank among the petroleum-producing countries of the world. At the present time it provides nearly two-thirds of the world's supply. Before the World War Russia stood next on the list with a production about one-fourth as great as ours. Russia and Mexico have been close rivals for second place. Other producing countries are the Dutch East Indies, Rumania, India, Mesopotamia, and Poland.

Why the American oil trade has developed. Our own great supply of oil has been, of course, the chief factor in building up our great trade in petroleum products. The United States sends gasoline, fuel oils, and lubricating oils chiefly to the manufacturing countries. Kerosene is sent chiefly to Asia, Africa, and South

America, regions not engaged in manufacturing. The oil companies of the United States have used unusual methods to create a demand for kerosene among people not familiar with its use. In parts of the Far East thousands of small kerosene lamps were distributed among the people at less than cost. As a result the companies have sold many thousand gallons of oil in that part of the world. Probably no other export of the United States is sent to so many different countries as are petroleum and its products.

Why nations seek to control oil wells. Petroleum and its products are now considered absolutely necessary in our industries and as fuel for ships, locomotives, and trucks used for transporting goods. In time of war these products are even more necessary. It was said that in the World War the "Allies floated to victory on a sea of oil." The leading nations of the world realize how much the growth of their industries in time of peace and the success of their navies in time of war depend upon the supply of oil. For these reasons they are using every effort possible to discover new supplies within their territories. Often a nation by purchase or by treaty gains control of oil wells within the boundaries of another country. Many of the wells of Mexico are controlled by citizens of Great Britain and the United States. As the demand for oil increases, the effort to control new deposits becomes greater.

COPPER

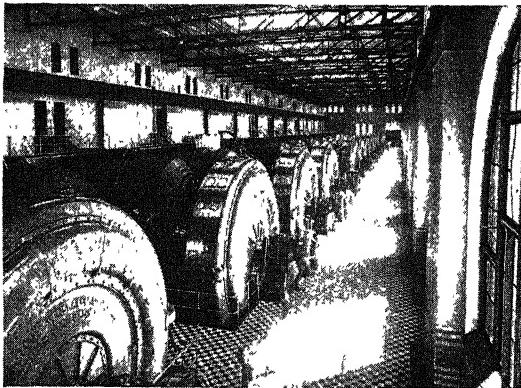
Early use of copper by the Indians. For a great many years Indian arrowheads made of copper have been found in parts of the Mississippi Valley. The early settlers wondered where the Indians obtained this material for their arrows. Later the source was discovered in the great deposits of pure, or *native*, copper in the vicinity of Lake Superior. The Indians mined the copper by building great fires on rocks containing the mineral. When the rocks had become very hot, they were suddenly cooled and broken by means of cold water which was dashed upon them. By this simple process the copper was separated from the rock.

It is possible that mines of the Lake Superior district were

worked by the mound builders several hundred years before white men came to this country. In one of the mines there was found a large mass of copper raised from the floor of the mine and supported on logs. The workmen, it would seem, were trying to raise the mass to the surface thirty feet above. Tools were found lying about the floor of the mine as if the workmen had just gone away. The native copper was of great use to primitive man, as he could easily shape it into the implements desired.

Why we use much copper to-day. There were, of course, very few uses to which any metal could be put by the untrained Indians. But to-day the number of uses which we can make of copper is almost unlimited. Since electricity has come into general use, much copper is needed for wires and for the making of electrical machinery (Fig. 110).

Copper is also useful because it is not readily acted upon by the weather and because it can be readily pressed into sheets. For these reasons we find it used for boilers, kettles, sheathing, and many other similar purposes. Combined with zinc, it is used to make brass, which is put to many common uses. Bronze is made by combining copper and tin. It is used in making statues, beautiful gates, ornaments for buildings, and handles for many implements. Copper is used in making coins by practically all the nations of the world. Many of the oldest coins known were made of this metal or of bronze.



Courtesy National City Bank, N. Y.

Fig. 110.—One of the largest power stations in the world owned by the Swedish Government. Much copper is used in the dynamos of a large station like this, as well as in the wires which carry the electricity to the surrounding country. Much of the copper used in these machines is obtained from the United States.

The copper deposits of the United States. The mines of Michigan were for a long time the chief source of American copper. In some of the mines of that state there have been found great masses of the pure metal weighing many tons. In later years mines near Butte, Montana, yielded even larger amounts than the mines of Michigan, though not in the form of pure metal. At the present time Arizona produces more copper than either Michigan or Montana (Fig. 111). The mines of Arizona yield more than one third of the American output. Recently Utah has become an important copper-producing state.

The United States produces nearly two thirds of the world's supply of copper. Her mines yield almost four times as much as those of her closest rival, which just now happens to be Chile. Next in order are Katanga, in the Belgian Congo, and Japan. A few other countries, including Spain, produce nearly as much as Japan. For many years Spain led the world in the production of this useful metal.

Copper is one of the most valuable exports of the United States. The United States has become the great copper merchant of the world. Few products exported by the United States exceed in value the copper which we send to other countries. The greater part of that which we export is sent to Germany, Holland, France, and Great Britain. You will notice that these are the same countries which import large quantities of fuel oil and gasoline. Because copper is used in manufacturing, it is exported in large quantities to the industrial countries of Europe. Unlike petroleum, it is not used extensively by countries that do little or no manufacturing.

Besides smelting and refining our own copper, we import ore from many parts of the world. Canada, Mexico, Spain, Germany, Cuba, and Chile are some of the countries from which we import copper and copper ore. The imported ore is smelted and the copper refined at convenient points along the Atlantic coast and may then be exported to countries using it for manufacturing purposes. Nearly half of the great copper refineries of the United States are located near the Atlantic coast. New Jersey refines more copper than any other state. Newark has large copper-

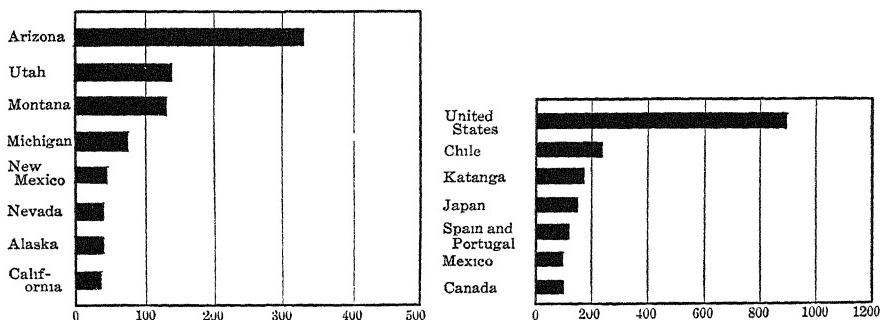


Fig. 111.— Production of copper by states in 1924 and by countries in 1925, in millions of pounds.

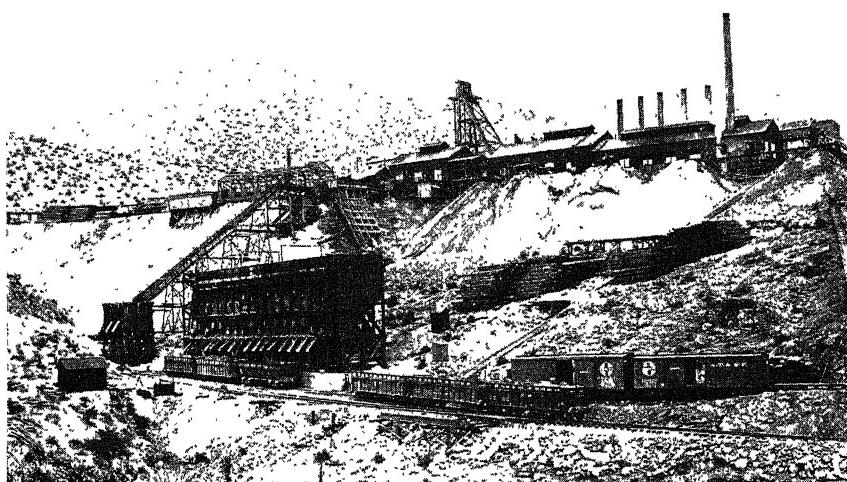


Fig. 112.— A general view of a great copper mine at Bisbee, Arizona. What is done with this ore after it is taken from the mine?

refining plants. Thus we see that our abundant supply of copper, with sufficient quantities of coal for smelting and improved methods of work, enables us to mine, import, and export more copper than any other country.

QUESTIONS AND PROBLEMS

1. How is the influence of our country increased among the other nations by our large supply of coal and iron?
 2. Which do you think is of larger permanent value, our coal or our water power? Why?
 3. Think of as many ways as possible to conserve our coal supply.
 4. How have petroleum and its products come to be more and more useful?
 5. How are gasoline, kerosene, and other products obtained from petroleum?
 6. Why is oil coming to be used more and more by merchant steamers and naval vessels?
 7. Why are petroleum and its products especially needed by manufacturing countries?
 8. Why have the supplies of petroleum been obtained from different places at different times?
 9. How does the United States rank as an oil-producing country?
 10. How has the use of gasoline and electricity increased the demand for copper?
 11. Why is much copper smelting and refining done on the Atlantic coast?
 12. Why does the United States export more copper than any other country?
- Why do we import copper ore?

SUGGESTED PROJECTS AND EXERCISES

1. Make a graph showing the six states that lead in the production of coal and the amount produced by each.
2. Make a collection of pictures illustrating mining and transportation of coal. Show the hard, dangerous work necessary for the production of our fuel.
3. Class discussion upon the importance of conserving coal and iron and the methods that should be employed.
4. Make a collection of articles made wholly or in part of copper.
5. Make a collection of pictures of copper mines, smelters, and refineries, and note the location of each. Make a collection of pictures showing the use of copper in and about the home.
6. Make a list of the many by-products of petroleum and their uses. Collect as many of the products or labels from containers as you can. Note the cities where the by-products are made.
7. On an outline map of the world indicate, by words or by shading, the countries producing petroleum. On an outline map of the United States indicate the states producing petroleum.

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CHAPTER XIII

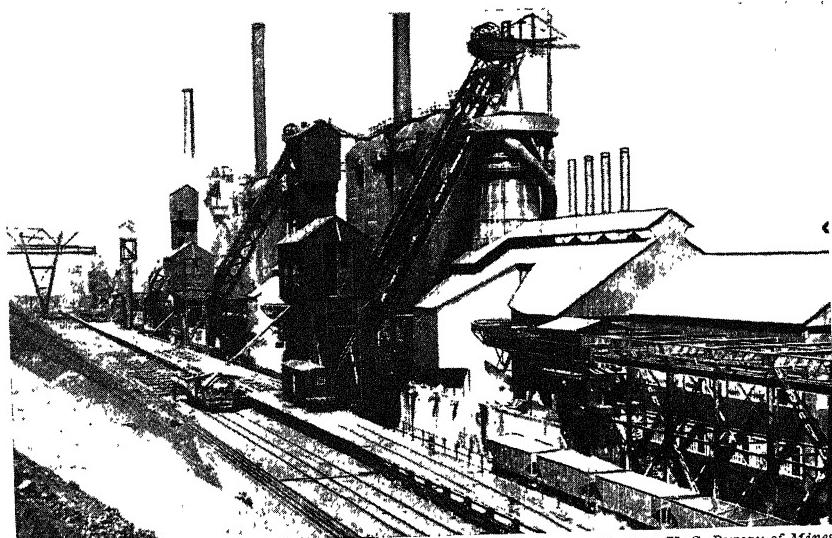
IRON AND STEEL, THE BASIS OF INDUSTRY AND TRADE

How iron is distributed. It is fortunate that a metal so useful to man as iron should be so very widely distributed. It is found in practically all parts of the world, and the supply for man's future use is very large. It is interesting to note, however, that only a few nations are great producers of iron. Iron making is a business that calls for large sums of money, great numbers of workmen, large supplies of coal, and good means of transportation. Regions without these favorable conditions, even though rich in iron ore, are not likely to become important iron-manufacturing regions. Such sections, for the present at least, must look to other nations for their needed supply of manufactured iron. Sweden offers an interesting example of a country using electricity and charcoal in place of coal in the manufacture of iron and steel. Western Europe and the eastern part of the United States produce most of the world's iron and steel.

What are the sources of iron? Iron never occurs in the pure state, but is always combined with some other substance, and the combination is known as an *iron ore*. Before it can be of any use to man, the iron must be separated from the other materials in the ore. This process, known as *smelting*, requires much knowledge and skill. It is not strange, therefore, that primitive man learned to use stone earlier than iron in making his implements.

How iron ore is smelted. Smelting is always done by subjecting the ore to intense heat. In modern times this is done by the *blast furnace* (Fig. 113). Strong drafts are forced through a furnace, which is filled with a mixture of coke, iron ore, and limestone (Fig. 114). The coke, burning in this strong draft, pro-

duces the intense heat that is needed. In this way the impurities which the ore contains are burned out, some of them uniting with the limestone to form the waste called *slag*. The iron melts and is allowed to flow off. This molten iron is often run into sand molds to form what is known as *pig iron*. This is the crude iron of commerce, and from it are made the different kinds of iron used in the industries, such as *wrought iron*, *cast iron*, and *steel*.



Courtesy U. S. Bureau of Mines.

Fig. 113.—General view of a modern blast furnace. In the center of the picture is a tall cylindrical stack. This is filled from the top with layers of coke, ore, and limestone. The blast is sent in from below. Notice the inclined hoists for the ore, fuel, and limestone. See Fig. 114.

It would be interesting to find out how men through long ages have learned to do this wonderful work of smelting. Of course it has grown from very simple beginnings. In colonial times the method was much simpler than now. Perhaps you can find out how and where the colonists did their work and where they obtained ore.

How fuel determines the location of the iron industry. About the middle of the eighteenth century England learned how

to smelt iron by the use of coke, which is made from soft coal. Previous to this, charcoal, made from wood, had been the fuel. The American colonies continued to use charcoal, as they had an abundance of wood and their coal fields had not yet been discovered. Shortly after 1800 anthracite came into use as a fuel, and it was found that this could be used for smelting in place of coke or charcoal. This resulted in the rapid centering of the iron industry of this country in eastern Pennsylvania along the Lehigh, Susquehanna, and Schuylkill valleys near the region where anthracite occurred and where iron ore was abundant.

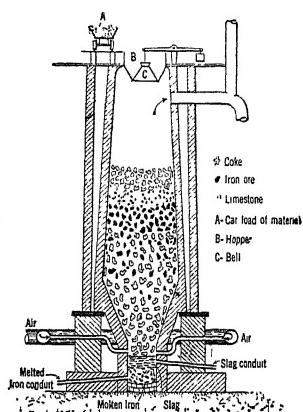


Fig. 114. — Vertical section of a blast furnace. The melted slag is lighter than the melted iron and floats upon it and runs off separately.

and its fine location as a shipping center, promptly took the leading place among the iron-producing centers of the country, which it holds to-day. Cleveland, Gary, and South Chicago have also become very important iron and steel centers. These cities not only have the advantage of being near coal fields but they can also receive ore directly by water.

Birmingham, in northern Alabama, has great advantages for iron manufacturing. The necessary coal, ore, and limestone all occur abundantly in the immediate neighborhood, making it possible for Birmingham to produce the iron at a lower cost

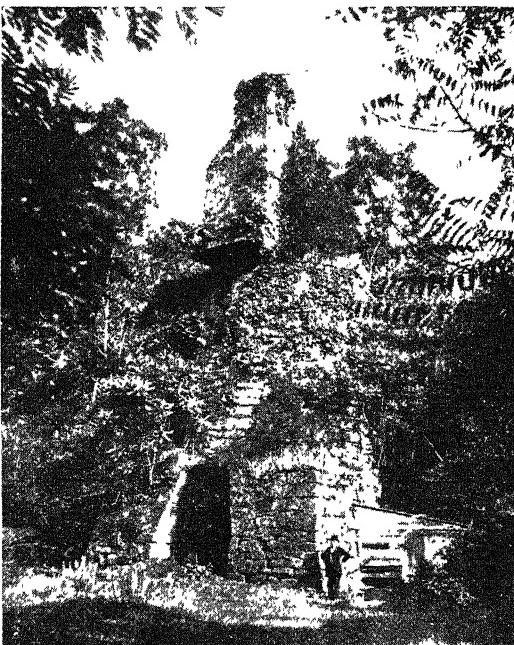
At the time of the Civil War eastern Pennsylvania was the great iron-producing section of the country. The great machine shops, foundries, rolling mills, shipyards, and locomotive works for which Philadelphia is noted have grown up in this section because of its abundant supply of iron and coal.

When the bituminous or soft-coal areas of western Pennsylvania were opened up, it became possible to manufacture and use coke for smelting in that region. This resulted in the gradual westward movement of the smelting industry. Pittsburgh, with its good supply of soft coal and ore, its excellent position in relation to markets,

than any other section of the country. As a result, this region is rapidly becoming one of our most important iron-producing centers.

Colorado has coal and ore and is smelting a large part of the iron used in the Rocky Mountain region. Pueblo is the chief center of this industry. Both Alabama and Colorado are at some disadvantage in not being nearer the great industrial centers of the country where much iron is needed.

Ore-producing regions. Iron ore is widely distributed throughout the country. This made possible the establishment of many local furnaces in the earlier days of our history (Fig. 115). In New England the bog ore found in the swamps, marshes, and ponds furnished the basis for the early iron industry there. This supply of bog ore, however, was soon exhausted, and it became necessary to find new sources of ore to meet the increasing demand. The same condition existed in other sections, and the problem of finding iron ore of the right quality and in sufficient quantity has long been a very important one. Mining engineers have been searching all over the country for iron ore, especially in the eastern half, where most of the people live and where most of the fuel is found which is so necessary in the smelting of iron. Many rich deposits have been discovered.



Courtesy of Philadelphia Commercial Museum.

Fig. 115.—Ruins of a colonial iron furnace in which charcoal was used as a fuel. Contrast this with a modern blast furnace, Fig. 113.

Groups of scientists in many lands are studying the matter with great care for the benefit of the world at large.

The Lake Superior ores. By far the richest deposits are found in the territory bordering upon Lake Superior in the states of Minnesota, Michigan, and Wisconsin. This is not only the greatest iron-ore-producing section in the United States, but the greatest in the world. The United States produces about forty per cent of the world's iron ore, and the Lake Superior region

furnishes about three quarters of this supply. The other quarter is produced mainly by the southern Appalachian region, which extends from Maryland to Alabama. Minnesota alone produces more than half of the country's iron ore (Fig. 116).

Need of conserving iron ore. How long will our ore last? This is a

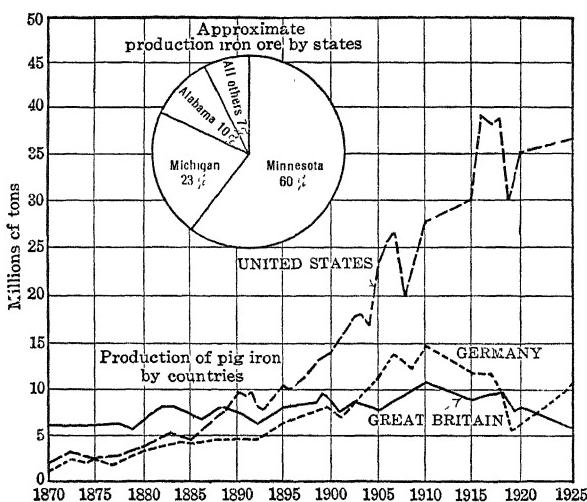


Fig. 116.—Production of iron ore and pig iron.

question that many are asking, but which is not easy to answer. We do not know how much will be needed in the future, what new fields will be discovered, or what improvements will be made in the methods of smelting so that poorer ores may be profitably used, and we do not know what substitutes may be found for iron. There is doubtless ore enough to last for many years, but it is our duty to think of the future generations as well as of our own immediate needs. We should not be extravagant in the use of iron simply because we have an abundance of it. The junk man who gathers up old iron to be manufactured again into useful articles is, perhaps unconsciously, doing a genuine

service to his country. Vast quantities are annually saved in this way and the work should be encouraged.

Where the ore is smelted. There is no coal in the Lake Superior region, and either the ore must go to the coal or the coal must go to the ore. The old English adage that the ore goes to the fuel holds true in this case. What reasons can you see for this?

About one-seventh of the Superior ore goes to points at the south end of Lake Michigan, especially to Gary and South Chi-

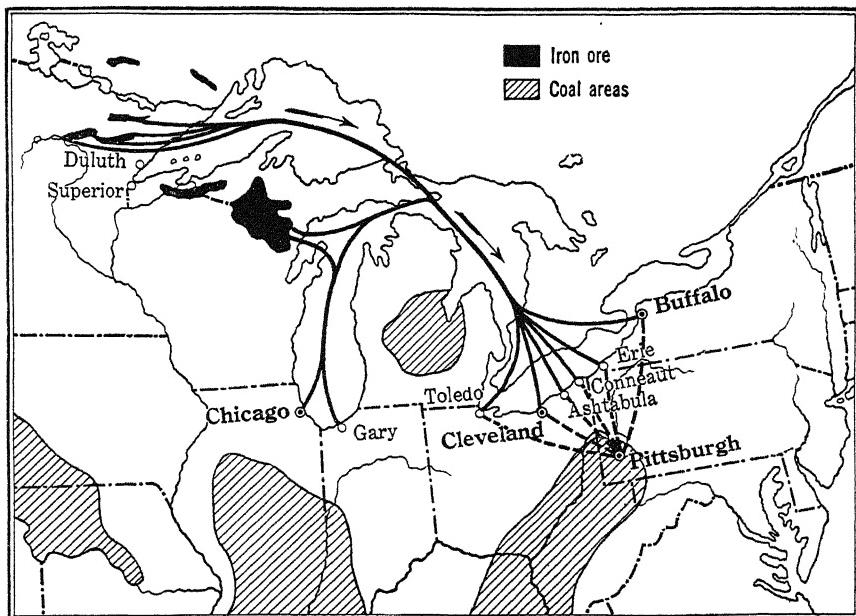


Fig. 117.— Movement of Lake Superior iron ore to the south shore of Lake Erie and Lake Michigan to meet the coal for smelting.

cago, where it is smelted by the use of coke from the coal of Illinois and Indiana. The remainder goes to the various ports along the southern and eastern shore of Lake Erie, as Toledo, Lorain, Cleveland, Ashtabula, Conneaut, and Buffalo (Fig. 117). Some of the ore is smelted at these ports with fuel brought from the near-by fields. Much is shipped by rail into the coal fields of Ohio, Pennsylvania, and West Virginia and is smelted at the

great furnaces of Pittsburgh, Youngstown, and other important centers in this region. The iron industry is rapidly growing at many of the Lake Erie cities. Probably the greatest region of the world for the production of iron and steel lies within a triangle the corners of which are at Buffalo, Pittsburgh, and Chicago. Can you account for this?



Courtesy U. S. Bureau of Mines.

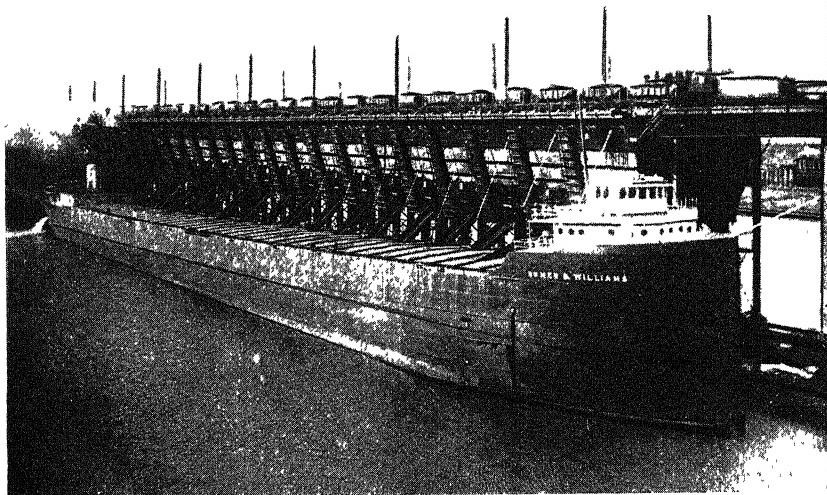
Fig. 118. — A huge steam shovel at work digging and loading ore in the Lake Superior region. Four or five tons are lifted at once by these shovels. No picking or shoveling by hand is required. How should this affect the cost of iron production?

An important smelting industry is now growing up in Minnesota through the use of fuel brought from the coal fields by the iron-ore barges on their return trips. What reasons can you see for this?

Cleveland not only smelts large quantities of the ore, but is also an important iron-manufacturing city. It holds first rank in the manufacture of wire and nails, and builds many great steel ships, bridges, and buildings. It has many foundries and makes many

automobiles. All these industries call for the use of much iron and steel.

Detroit is especially noted for its manufacture of automobiles and their parts. The United States has eighty-three per cent of the world's motor vehicles. Practically all of these are manufactured in this country, thus putting us far in the lead in this rapidly growing industry. Few automobile factories manufacture



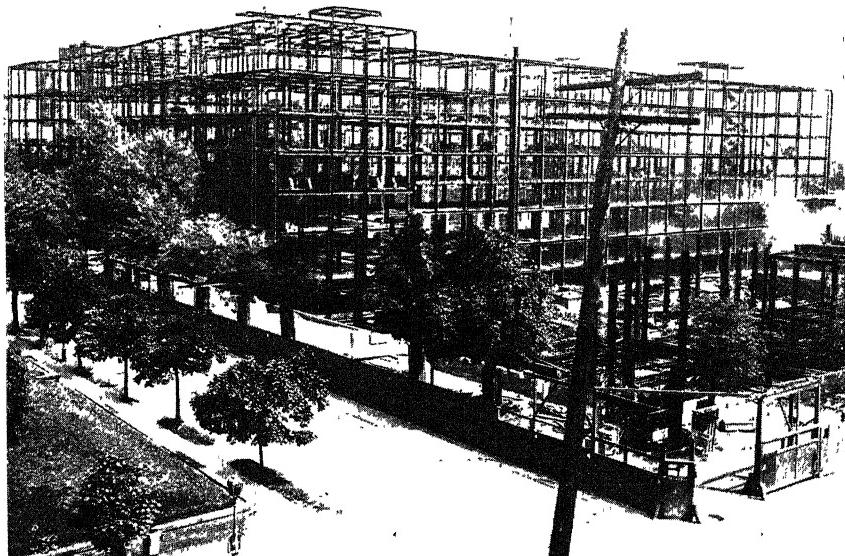
Courtesy U. S. Steel Corporation.

Fig. 119.—Loading iron ore into a lake steamer at Duluth, Minnesota. Freight cars are run out upon the docks, and the ore is dumped automatically into ore pockets. From these it is run into the steamer through chutes, as shown in the picture. In an hour or two a vessel is loaded and ready for her voyage.

all the parts used in making the car. These are made in separate factories, and there is a tendency for such factories to cluster about a single center. Detroit is the most important place for the concentration of the industry. This, together with the great shipyards, car shops, foundries, and machine shops, calls for the use of large quantities of iron and steel. Many of the great ships engaged in the transportation of ore are made in Detroit.

Milwaukee, on Lake Michigan, smelts some of the Lake Superior ore and uses large quantities of iron and steel in her great machine shops and iron foundries.

How the ore is handled. Nowhere in the world are there such excellent facilities for the handling of ore as in the Great Lakes region. The great mass of the ore reaches the smelters without



Courtesy U. S. Geological Survey.

Fig. 120.—The building occupied by the United States Department of the Interior at Washington is here shown in process of construction. The frame is made entirely of steel. Tremendous quantities of steel are used in all such modern buildings as this.

having been touched by the human hand. At the mines cars are loaded by huge steam shovels (Fig. 118). At the shipping ports, Duluth, Superior, and Two Harbors, the trains are run out upon the huge docks and the ore is dumped automatically into ore pockets (Fig. 119). Great steamers, especially constructed with open decks, are quickly filled with ore from chutes which are opened to let the ore down from the pockets above (Fig. 119).

Automatic unloaders (Fig. 31) handle the cargoes on their arrival at the ports where it is received. This handling of ore by machinery greatly reduces the cost of manufactured iron and is one of the reasons why America can supply so much iron and steel to the other nations of the world.

The Sault Sainte Marie Canal. Great cargoes of ore go through the Soo Canal on their way to the smelters. The canal connects Lake Huron and Lake Superior, and is built around the Falls of Saint Marys River. It is said that in 1845, before the canal was built, a single horse hauled all the freight that passed between Lake Huron and Lake Superior. To-day more freight passes through this canal than through any other in the world. Much the largest part of this freight is iron ore.

Why steel is extensively used. Great quantities of steel are used to-day wherever great strength or hardness is required, as in modern machinery, railway rails, frames for ships, buildings (Fig. 120), bridges, and elevated railroads, or in the manufacture of edged tools. Sixty or seventy years ago it cost so much to



Courtesy U. S. Bureau of Mines.

Fig. 121.—A huge Bessemer converter in action. Twenty tons of iron may be made into steel by this converter in fifteen or twenty minutes. How has this invention influenced manufacturing and transportation?

make steel that it could not be used extensively for such purposes as these. In 1867 the English invention of the so-called *Bessemer process* (Fig. 121) greatly reduced the cost of manufacture and made it possible to use steel extensively in place of ordinary iron. This invention has greatly helped the development of the world's commerce and industry. A stronger steel is now being manufactured by what is known as the *open-hearth process* and is rapidly taking the place of the Bessemer product, especially in the manufacture of steel rails.

The continents of South America, Africa, Asia, and Australia manufacture almost no iron, and this vast portion of the world must look to western Europe and the United States for its iron and steel. It is said that a single mill in Pittsburgh produces more iron than these four continents combined.

QUESTIONS AND PROBLEMS

1. More iron has been manufactured in the world during the past hundred years than during all the previous centuries combined. What reasons can you give for this?
2. Why is the amount of iron and steel that a nation uses a good measure of its degree of civilization?
3. The cities at the south end of Lake Michigan and on the south shore of Lake Erie are generally engaged in iron manufacturing. What reasons can you give for this?
4. Why have Duluth and Superior developed as shipping ports for ore rather than as iron-manufacturing centers?
5. Why is Gary, Indiana, a fine location for great steel mills?
6. Why do Pennsylvania and Alabama make large quantities of structural steel, while New England makes fine steel instruments?
7. What nations supply most of the iron goods for the world? Why?
8. What are the two most important iron-ore regions of the United States?
9. How is iron ore mined in Lake Superior region? Where is it smelted? Why?
10. Describe the journey of Lake Superior iron ore to the smelters.
11. What prospect has China of becoming an iron-producing country?

SUGGESTED PROJECTS AND EXERCISES

1. Prepare an exhibit for the classroom (Fig. 122). Secure several kinds of iron ore, pieces of cast iron, wrought iron, steel, anthracite, soft coal, coke, and charcoal. Label each and state its part in the manufacture of iron.

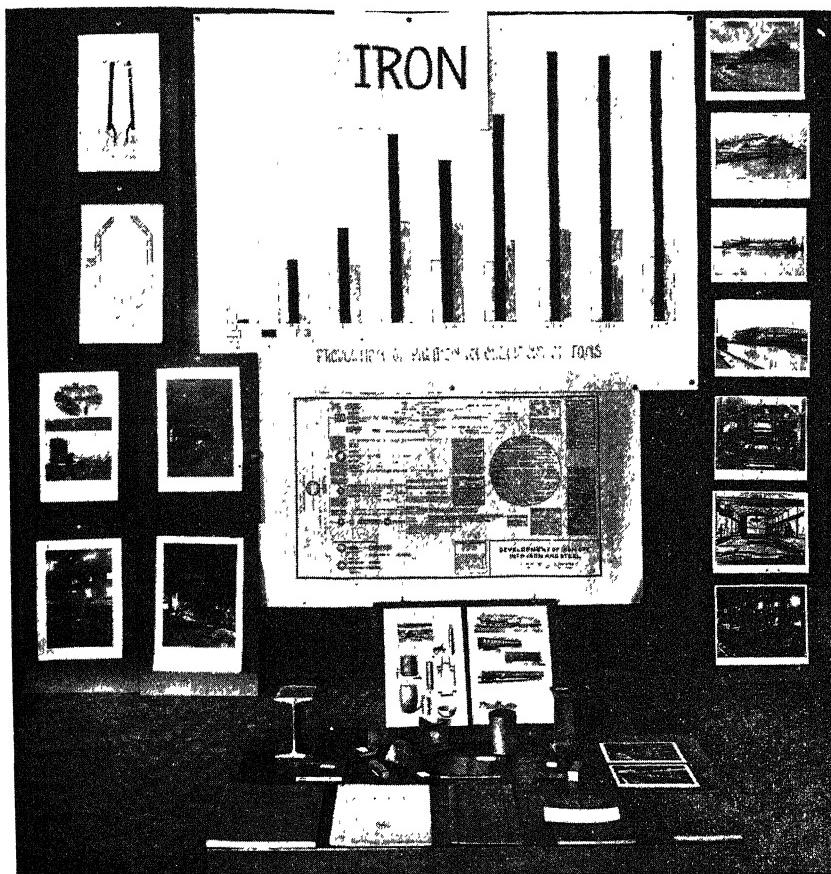


Fig. 122.—A suggested project on iron and steel showing a collection of graphs, pictures, pamphlets, and manufactured articles. Can you work out one something like this?

2. On an outline map of the world show iron-ore areas and iron-manufacturing areas.
3. Appoint a committee to report on "A Comparison of a Colonial Forge and a Modern Blast Furnace" to show the great progress in smelting.
4. On an outline map of the United States indicate the iron and coal deposits. Mark with colored dots the largest iron-manufacturing cities. Print their names. Account for their locations.
5. Construct a diagram that will show the relative amounts of steel produced by the United States, Great Britain, and Germany.

6. Collect advertisements of all kinds of iron articles to see in what cities they are made.
7. Make a list of all articles you can think of that are made of wrought iron, of steel, or of cast iron.

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CHAPTER XIV

OUR TEXTILE MILLS, THEIR PRODUCTS, AND RAW MATERIALS

THE COTTON INDUSTRY

Textiles in Colonial days. The colonists who came to America did not use much cotton until after the invention of the cotton gin and other machinery. Before that time they used chiefly wool

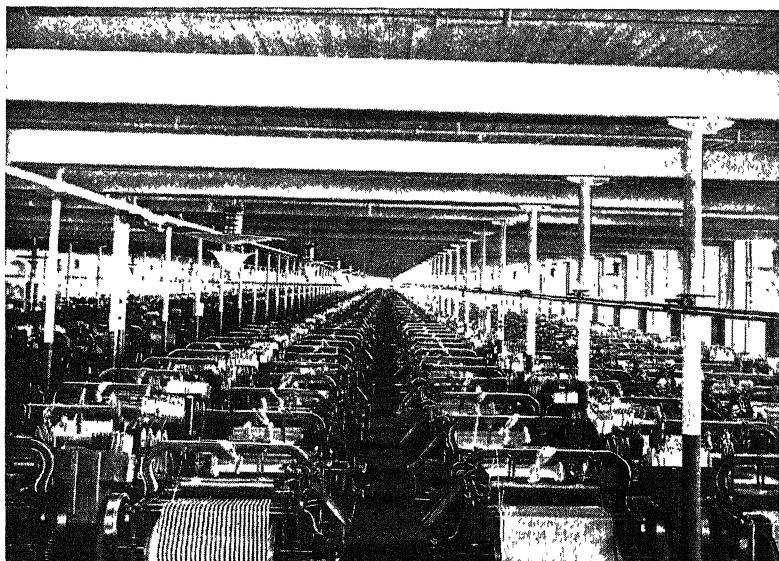


Courtesy Metropolitan Museum of Art.

Fig. 123.—Spinning flax in colonial days. Here only one thread is being spun at a time. Compare this method with a modern machine that spins scores of threads at a time with very little attention from the operator.

and linen. Then nearly all spinning and weaving was done by the women in the homes (Fig. 123). The mother and daughters, besides doing all the usual household tasks, spun yarn from wool or flax, wove it on hand looms into cloth, and made the cloth into garments for all the members of the family.

Perhaps you still have in your homes articles of wool or linen made with spinning wheel and hand loom by your great-grandmother or your great-great-grandmother. Even the spinning, weaving, and coloring were not all of the work, for the cloth had to be cut into garments and sewed by hand, as sewing machines had not then been invented. Do you wonder that the styles did not change frequently in those days? What a relief it must have



Courtesy of the Amoskeag Manufacturing Textile Union.

Fig. 124.—This very large room is filled with machines for weaving cotton cloth. These machines do their work with very little attention from the operatives. If a thread breaks the machine stops at once. An operative connects the threads and starts the machine again.

been when machines were invented and it was no longer necessary for all this work to be done in the homes (Fig. 124)!

How machinery came to be used. At first Great Britain would not allow textile machinery to be exported to America. She also guarded carefully all patterns of machines so that they could not be copied in other countries. Why did she do this? Finally, however, English workmen who emigrated to America were able to make from memory machines similar to those in use

in England. This was the beginning of the factory system in our country. Probably you think that the first factories in this country made cloth from woolen and linen yarn. But this was not the case. It was more difficult to make machines for woolen goods than for cotton goods. For this reason the cotton mills grew at first more rapidly than the woolen mills. There were many of these little mills scattered all over New England.

Advantages for manufacturing in the North. The people of the northern colonies had done much more spinning and weaving in their homes than those of the southern colonies. Thus it was in the former that the first mills were built and the first manufacturing cities grew up. The northeastern section of the United States is well adapted to the growth of the textile industry. All the early mills used water power, and this part of the country has many waterfalls. On the Merrimac River, at Manchester, New Hampshire, and Lowell, Massachusetts, there are many large mills. On two small rivers in southeastern Massachusetts are two of the most important cotton-manufacturing cities in the United States—Fall River, which stands first in the amount of goods produced, and New Bedford, which makes the finest quality of goods. The great woolen mills of the country are at Lawrence, Massachusetts, and in the vicinity of Providence and Philadelphia. There are many other cities and towns in this part of the country which manufacture textiles. Nearly all these factories are located on rivers and at first used only water power. Now many of them have outgrown the water power of the locality and are obliged to use steam. This has not been a great disadvantage, for coal can be obtained cheaply, especially by cities situated on or near the coast. At the present time not more than half of the power used in running the mills of New England is water power.

The moist air of New England has favored the manufacturing of cotton goods. If the air is too dry, threads passing through the machines become electrified, curl, and break. Means, however, have been found for moistening the air in the mills, so that moist air is no longer a factor in deciding the location of new mills.

The manufacturing cities and towns of our northeastern states are favorably located because they can readily receive raw materials

from all parts of the world. The greater part of the cotton comes from our own southern states, chiefly by rail. Some cotton is imported from Egypt. Egyptian cotton is imported for making threads, fine yarns, and hosiery, and for mixing with silk. Peruvian cotton is rough and crinkly and is good for mixing with wool.

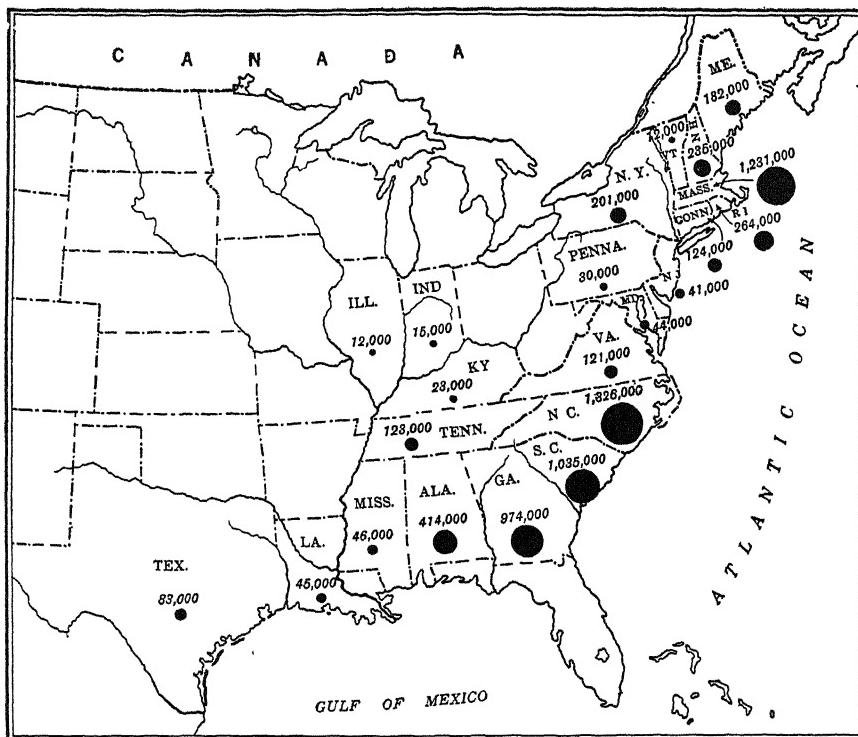


Fig. 125.—The number of bales of cotton consumed by the mills of the cotton-manufacturing states in 1923. The New England states used 2,048,000 bales, other non-cotton-growing states 368,000 bales, and the cotton-growing states 4,246,000 bales. What advantages have the cotton-growing states for the manufacture of cotton goods?

Manufacturing in the South. Although the northern states were the first to manufacture textiles, they are not now the only states engaged in this work. Since the Civil War some of the southern states have built cotton mills at a very rapid rate. Nearly all the mills of the South are in North and South Carolina,

Georgia, and Alabama. These states have the advantage of being able to raise cotton within their own borders. They have water power on the Fall Line and on the Piedmont to the west of it. They also have cheaper labor than can be had in the North. Because the labor of the South has not in general become so highly skilled, much of the cloth made in these mills is coarser than that of the North. The value of the cotton goods made in the North is much greater than that of the goods made in the South, but the amount of raw cotton used by the southern mills is greater than that used by the northern mills. This is because coarse goods require much raw material and less expensive labor, while the finer goods need less raw material and more skilled labor. It is the amount of labor spent upon the goods rather than the amount of cotton they contain which makes them valuable. The southern mills are, however, constantly improving the quality of their product.

Trade in cotton goods. All the textile manufacturing of our country is carried on in a few states (Fig. 125). All other states of the country must obtain their supply from them or from imports. Since the United States has not been a manufacturing country so long as some of the countries of western Europe, we do not make the finest cotton and woolen goods. These we import from Europe, particularly laces and embroidery from Switzerland, France, and Germany, and woolen cloths from England. We



Courtesy U S Department of Agriculture.

Fig. 126.—Merino sheep. Any farmer who wishes to produce a great deal of wool would want to own sheep like this. The wrinkled skin gives much surface on which the long wool can grow.

export chiefly the cheaper cotton goods. These are sent very largely to the other countries of North America and to South America. Just now our best customers are the countries bordering the Pacific coast of South America. A few years ago we were sending a large part of our exported cotton goods to China, but in recent years we have not been able to compete successfully with Japan in the Chinese markets. In a later chapter we shall learn of the great strides made by the Japanese in cotton manufacturing.

THE WOOLEN INDUSTRY

Why we use wool for clothing. We learn in our study of leather that man made his first clothing from the skins of animals. It

requires more intelligence and greater skill to make cloth from the hair which grows out of the skins than from the skin itself. The wool of sheep, which is a kind of hair, has been used for many centuries to make the clothing of the people of the cooler parts of the earth. Wool is warm because the hairs are very crinkly. The crinkly quality of wool causes cloth made of it to be soft



Courtesy of U. S. Department of Agriculture.

Fig. 127.—Southdown sheep. The farmer who wishes to produce wool would not care for a flock of plump Southdowns. Southdowns are more valuable for mutton than for wool.

and porous. The pores, or holes, are all filled with air. The warmth of the woolen cloth is due to the layer of air imprisoned in the pores. Perhaps you know that storm doors and windows keep our houses warm because of the layer of air held between the doors or windows. This layer of air prevents the heat from escaping from our houses just as the air of woolen cloth prevents the heat from escaping from our bodies.

Where the wool is obtained. Great care has been taken to breed sheep having wool that is long and fine (Figs. 126, 127). Spain was long known as a country from which particularly fine wool could be imported. The merino sheep producing this fine wool have now been introduced into all sheep-raising countries. The weight of an average fleece is between six and seven pounds. There are about fifty million sheep in the United States and the annual wool clip is about three hundred million pounds. Montana, Wyoming, Ohio, and New Mexico lead all other states in wool production. Australia raises more sheep and exports more wool than any other country. Australia and Argentina are the only countries that raise more sheep than the United States. New Zealand, South Africa, and Uruguay also export wool.

The United States imports every year for manufacturing more wool than it produces. Other countries importing large amounts of wool are Great Britain, France, and Germany, each of which imports more than the United States. All of these countries manufacture large quantities of woolen goods. Woolen manufactures consist of cloth for clothing and of blankets, carpets, and rugs. The clothing wool brought into our country comes from Argentina, Australia, and Great Britain. Carpet wool comes from China, Russia, and Great Britain.

Shearing. The wool must be sheared, or cut off the animal, at least once a year. In the northern states this is done in the late spring when the sheep do not suffer because of the loss of their coats of wool. In warmer climates the fleece is often removed twice a year. The shearing may be done by means of shears very closely resembling a pair of large scissors. On large ranges where there are thousands of sheep to be sheared the work is commonly done by means of clippers similar to those used by barbers. The clippers are run by electricity and have safety devices so that there is no danger of cutting the animal as there is when the large shears are used.

Why the manufacturing centers have developed. Unlike the cotton mills, the woolen mills are located almost entirely in the northeastern states. Why has this great industry grown up in this part of our country? A very important cause was the early

start. In the early days the raw material was obtained mainly from sheep raised in these states. Later as the demand for wool became greater and the western part of our country developed, much wool came from the ranches of the West (Fig. 128). Even that supply was not enough for the great mills of later years, and wool has been imported from Argentina (Fig. 129), Australia, and



Courtesy U. S. Department of Agriculture.

Fig. 128.—A flock of sheep feeding in a national forest, Utah. The Rocky Mountain states supply a considerable part of the wool manufactured in our mills.

other wool-producing countries. With the importation of wool from foreign countries, the location of the mills near the coast has been a favorable one. Wool brought to this country in ships can be taken easily to mills in Lawrence, Providence, and Philadelphia. Philadelphia and Yonkers have for a long time been the great carpet-manufacturing centers of the United States. The best market for the products of the woolen mills has been for many years in the eastern part of the country where

most of the people have lived. Even to-day it is the most densely settled part of the United States and is an excellent market for both cotton and woolen goods.

The United States exports very few woolen goods. Cotton clothing is now worn by nearly all peoples no matter how poor or how backward they may be. Woolen goods are commonly imported only by enlightened and progressive peoples. For this



Courtesy Pan-American Union.

Fig. 129.—A big shed for storing wool in Buenos Aires. The workmen are engaged in sorting the wool and packing it in big bales for export. Why must the manufacturers of the United States import much of their wool?

reason the market for woolen goods is much smaller than for cotton goods.

THE SILK INDUSTRY

The importance of the silk industry in the United States. As you have studied geography, you have probably come to think of Japan, China, France, and perhaps Italy as countries noted for the manufacture of silk goods, but doubtless you have also learned that the silk manufactures of the United States exceed those of any other country. We now use in our mills more than three-fourths of all the raw silk produced. Is it not strange

that a country which does not produce raw silk should make use of more of this material than all the silk-producing countries combined?

Where the United States obtains its raw silk. Why do we not grow mulberry trees and raise silkworms ourselves? It is not because silk cannot be produced in this country. It is because the American people have learned after years of trial that work with silkworms and the production of cocoons can best be done in

lands where labor is cheap and where people are willing to carry on the work in their homes, as in Italy, China, and Japan. It is not surprising, therefore, that American manufacturers found it more profitable to import their raw silk and to devote their whole time to the manufacture of cloth.

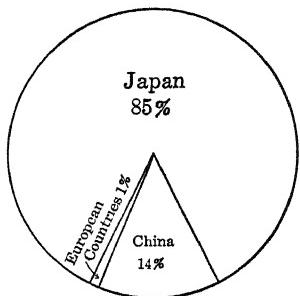
Formerly the United States imported the most of its silk from China, but in recent years the greater part has been obtained from Japan. Nearly all the raw silk now brought into the United States comes from those two countries (Fig. 130). We import spun silk from France, Italy, and Switzerland. This

Fig. 130.—Countries from which the United States obtains its raw silk, with the per cent from each country. Why do we import more silk from Japan than from any other country?

is made by unwinding the threads of the cocoons and spinning them into thread or yarn.

Silk manufacturing in our country has grown very rapidly in recent years. Forty years ago the value of the products was less than one-tenth as great as now. In the last five years the value of the product has more than doubled. Although we manufacture much silk ourselves, we import silk goods from Japan, China, and France. In a recent year more than eighty per cent of all silk manufactures imported into the country came from Japan.

Why the industry grew. Doubtless the chief reason for the growth of the silk industry of the United States is the great demand for silk goods within the country. Although we use more silk than all other countries combined, we export fewer silk

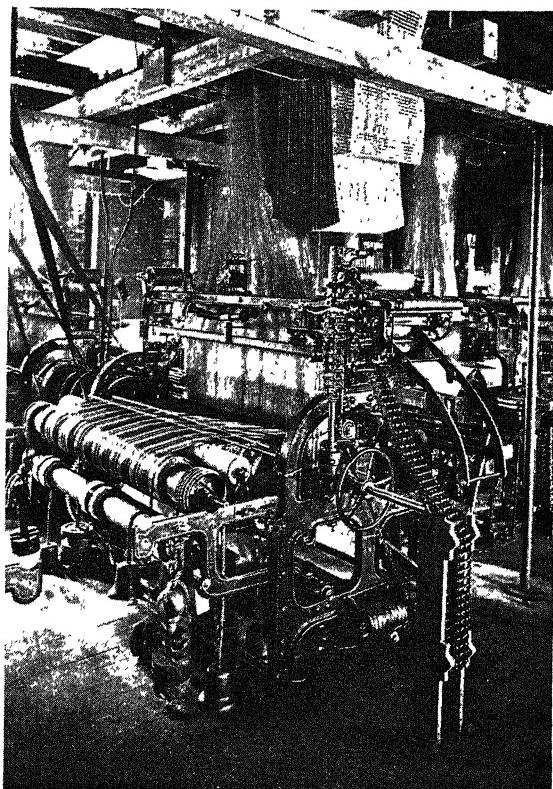


products than we import. In recent years the value of our exports has been about one-half the value of the imports. Silk manufactures exported from the United States are sent mainly to Canada, South America, and Australia.

The place which the United States holds in silk manufacturing can best be shown by comparing it with other countries. Japan uses about one-fourth as much raw silk as we do, and Italy and France each about one-sixth as much. Great Britain and Switzerland consume much smaller quantities.

Centers of production. We have seen that the greatest centers for the manufacture of cotton and woolen goods are in New England. This is not true of the silk

industry. There are important centers in Connecticut, Massachusetts, and Rhode Island, but the leading states are Pennsylvania, New Jersey, and New York. Paterson, New Jersey, leads all other cities in the industry (Fig. 131). This one city makes about one-fourth of all silk goods woven in the United States.



Courtesy Chamber of Commerce, Paterson, N. J.

Fig. 131.—Jacquard loom in a New Jersey mill. This complex machine, invented by a Frenchman, weaves silk goods having beautiful designs. Perforated sheets (such as are seen hanging above the loom) are used in the machine as a guide in making the pattern. Designs in our table linen are also woven in this way.

A large part of the work of the silk mills is performed by women and girls. The silk industry is usually located in cities having other industries employing large numbers of men. Such a center provides a large number of women — the wives and daughters of the workmen — to work in the silk mills. It is for this reason that we often find the silk mills of New Jersey and Pennsylvania in cities having large iron and steel plants.

Change in quality of manufactures. In former years, when the demand for clothing and other articles made of silk was much less than it is to-day, the quality of the goods was greatly superior to that of the present time. Women boasted of silk gowns that would stand alone. Goods of that quality would last a lifetime. But to meet the greater demand of later years, manufacturers have used less and less silk to make a yard of goods and have thus produced cloth of lighter weight. That silk fabrics of to-day may have the appearance of heavier goods, they are often treated with a compound of tin. This compound, however, proves to be very injurious to the fabrics, for the goods soon break, and the life of the cloth is thus greatly shortened.

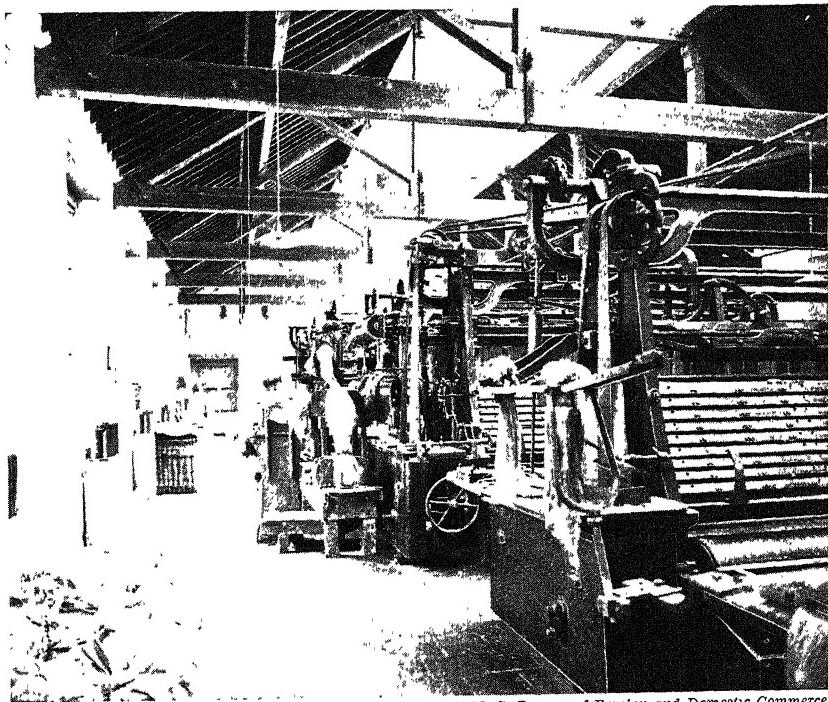
Artificial silk. Another way of meeting the great demand for cheap silk goods is by the use of artificial silk. This is made from cotton waste or from the pulp of the spruce tree. Silk made in this way may be spun or woven. The threads may be made coarse or fine and will take a luster even higher than that of natural silk. As the production of artificial silk is rapidly increasing, this tends to reduce the price of natural silk. Why?

THE LINEN INDUSTRY

Why linen was useful to the colonists. You will remember that linen is made from the fibers of the stem of the flax plant. If you had lived in one of the early colonial homes, you would have understood thoroughly all the processes of making linen cloth. The boys helped in planting the seed or in harvesting by pulling the plants up by the roots or by preparing the fibers for spinning. The girls assisted their mothers in spinning and weaving. Flax was raised by nearly all the colonists. As in the case of wool, all

the processes of making linen were carried on by members of the household.

Housewives were very proud of their chests of fine linen which they themselves had spun and woven. These chests contained, besides articles of clothing, napkins, tablecloths, sheets, pillow-cases, and towels. So important did it seem to have a good supply



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 132.—These machines separate the fine fibers from the stem of the flax plant. Practically all this work is done in European countries where the flax is raised. Nearly all the linen fabric or cloth used in our country is imported.

of linen that many colonial mothers, following the custom of their European ancestors, started chests for their daughters when they were very young girls. With the help of their daughters they gradually added to the contents of the chest until the girls were old enough to marry, when it contained a complete supply of household linen. In Washington's time more flax was used in

this country for making textiles than either cotton or wool. As cotton came into use, it gradually took the place of linen to a very great extent. Very little flax is now grown in the United States for its fiber. The treatment of the stems necessary to separate the fibers and prepare them for spinning requires so much handwork that we leave the industry to countries in which labor is cheaper than in the United States. The products are mainly thread, yarn, twine, towels, and rugs. Factories in Troy, New York, manufacture large quantities of collars and cuffs from fine linen imported from Europe (Fig. 132). The other linen manufactures used in this country are imported from European countries, especially from Ireland.

Large areas are devoted to the raising of flax in the Red River valley both in the United States and Canada, but the seed is the most important product. From the seed oil is obtained, which is of great value in making paints. This is known as *linseed oil*. Why is it called by that name?

QUESTIONS AND PROBLEMS

1. Why did the colonists not weave cotton as well as wool in their homes?
2. What advantages has New England for the cotton industry?
3. How can the New England mills afford to use coal for steam when there is no coal in New England?
4. Why has the South developed the cotton industry since the Civil War?
5. Why can European mills make finer cotton and woolen goods than the mills of the United States?
6. To what countries do we export cotton goods? Why?
7. Why is raw silk not produced in the United States?
8. The manufacture of silk goods in our country has increased rapidly in recent years. Account for this increase.
9. Why are many of the silk mills in large industrial centers?
10. Why has the making of artificial silk come to be an important industry?
11. Why was it necessary for the boys and girls to help in the raising of flax and in the preparation of linen in colonial days?
12. For what purpose is flax raised in this country now? Why?
13. We see much less linen in our homes than was used in colonial days. Why is this so?
14. Why is linen used for making thread, yarn, and twine?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the United States locate all important cotton-milling cities of the North and the South. Locate with dots and print names. Be sure first to draw the rivers on which the cities are located if they are not already on the map.
2. Make a collection of samples of different kinds of cotton cloth, as calico, muslin, gingham, etc.
3. Make a chart of pictures showing the contrast between the hand loom and the spinning wheel of colonial times and the modern factory machines.
4. Make a collection of pictures of shearing sheep, scouring wool, processes used in woolen mills, etc.
5. Make a collection of pictures showing the production of raw silk and the manufacture of silk goods.
6. On an outline map of the world color in the areas producing raw silk. Draw steamer routes from those regions to ports of the United States.
7. Make a collection of articles made of linen in the different stages of manufacture.
8. Make an outline map of the world and shade areas in which flax is raised. Draw routes from these areas to ports of the United States.

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CHAPTER XV

LEATHER AND RUBBER IN INDUSTRY AND COMMERCE

LEATHER

Early uses of leather. The first clothing worn by man was made of skins. Man took the animal's coat and used it for his own. Not only were the raw skins used for clothing and for tents, but primitive peoples learned to treat the hides so as to make them last much longer. The clothing of the American Indian consisted almost wholly of the skins of animals. The Indian shoe, the *moccasin*, is now used in winter by hunters, trappers, and sportsmen. In Arctic regions skins are the only materials which can possibly be used for clothing. The preparation of the clothing is done by the women. In cold climates, as in the Far North, the hair is left on the hides. This makes them much warmer. The greater warmth is due to the layer of air inclosed by the hairs. It is for this reason that furs and fur garments are worn by many people in cold weather.

In the American colonies leather was used not only for making shoes but also for making coats, vests, breeches, and even stockings, especially for the use of servants. In some cases the skirts and aprons of the women were made of leather. It was of great use also in the making of harness. So great was the need of leather in the colonies that in Massachusetts laws were passed requiring all skins of animals to be saved and taken to a tannery. Some of the articles that now require leather in their manufacture are shoes, gloves, automobiles, harness and saddles, and belting used on machinery.

How the shoe industry began. The shoe industry has had a most remarkable growth. It began with the settlement of New England. As early as 1629 a shoemaker was sent from England

with the necessary leather to make shoes for the colonists. For his services he received fifty acres of land and fifty dollars per year. In those days the shoemaker traveled from house to house, making shoes for every member of the family. On his arrival at the house of a customer he found several hides tanned and ready to be made into shoes. The hides were often those of animals raised by the customer and prepared at a tannery near by. A tannery was



Courtesy United Shoe Machinery Co., Boston.

Fig. 133. — This is the way the work was done before shoe machinery was invented. In early colonial days one man did all the work in making a pair of shoes.

established at Lynn the same year that the shoemaker came from England.

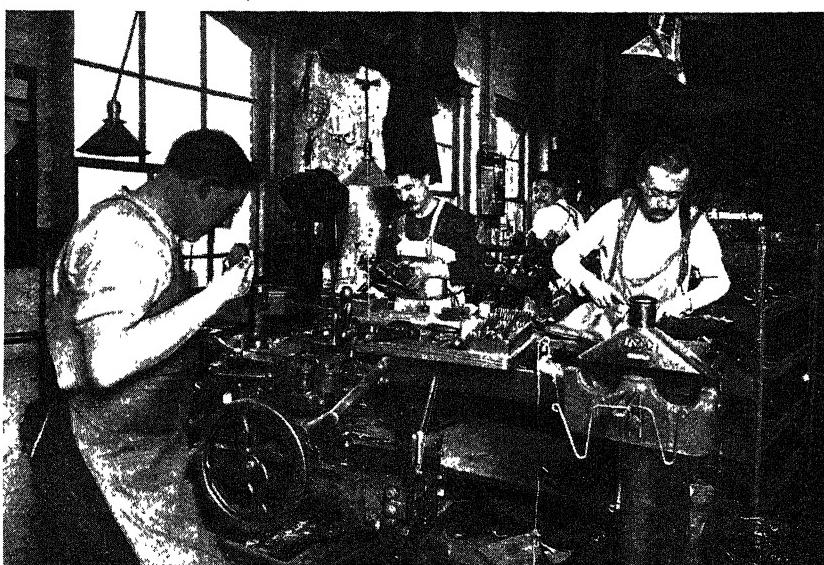
The rise of the shoemaker's shop. The next stage in the making of shoes was the building of small shops. The shoemaker, instead of going from house to house, had a small building to which his customers came (Fig. 133). Even then the entire work of making a shoe was done by one man. With the clumsy tools of

those days we can imagine what a crude product the finished shoe must have been. Probably none of us would care to wear such a shoe to-day. As business increased the shoemaker hired men to help him. Then there came to be some division of labor. Perhaps one man cut out the parts needed, another sewed the upper parts together, and another fastened the soles to the uppers. Business grew so rapidly that more labor was required than could be given by the men in the little shops. Then shoes were sent out into the surrounding homes for a part of the work to be done. In one home only one kind of work was performed; bindings were sewed on the uppers, or soles were nailed on with wooden pegs. This method of making shoes seems very strange to anyone who has been through a modern factory with its hundreds of machines working at lightning speed. Yet it was only a few years ago — certainly no longer than when your grandfather was a boy — that shoes were made chiefly by hand. Many of the old shoe shops of eastern New England still exist and are used for henhouses, tool houses, and other such purposes by people whose fathers were shoemakers.

The coming of the factory. After the little shoe shop came the factory. This was made possible by the invention of machines and by the use of power, which completely changed the methods of manufacture. Large machines are expensive and can be used only in factories turning out hundreds or even thousands of shoes per day (Fig. 134). Therefore with the use of machinery the shoemaker and his helpers left the shoe shop and became workers in the larger factories. When shoemaking machinery was first invented, it was naturally first used by the men who had been making shoes by hand. It was for this reason that the greatest shoe-manufacturing cities of New England grew up where they are. In the vicinities of Boston, Brockton, and Lynn there had been many shoe shops where shoes had been made by hand. As soon as machines could be had, the shoemakers of those places bought them and thus laid the foundations for the great factories of those cities.

Why other countries import our machines. As has already been said, these wonderful machines which American workmen have

been improving ever since shoe machinery was first used are exported to all parts of the world. Because of their remarkable efficiency they enable workmen in other countries to make good shoes, although in few places, if any, can shoes be made equal to those in our own country. We can readily understand that a country which imports much of this shoe machinery will soon manufacture its own shoes and not be obliged to buy from other



© Brown Bros.

Fig. 134.—These men are using very complicated machines in making shoes. Usually all the men in one room do the same kind of work. Each man in the factory does the kind of work he has learned to do quickly and well. The shoes are sent from this room through many other rooms before they are ready to be shipped away.

countries. Argentina and Brazil are very good illustrations. In recent years many shoe factories have been built in these countries. Much of the machinery is furnished by the United States. Argentina and Brazil with their abundance of hides can therefore make shoes for themselves and will not be obliged to import such quantities as formerly.

Centers of the shoe industry. More than half of the shoes made in the United States are manufactured in Massachusetts

and New York. Brockton leads in the manufacture of men's shoes, and Lynn in the making of women's shoes. Haverhill leads the country in the production of slippers. Shoes are also made in Manchester, New Hampshire, and in many other cities and towns of New England. As population has increased in other parts of the country, new centers of manufacture have sprung up west of New England (Fig. 135). New York, St. Louis, Binghamton, Rochester, Cincinnati, Milwaukee, and other cities outside of New England have large shoe factories. They can obtain raw materials almost as advantageously as cities on the

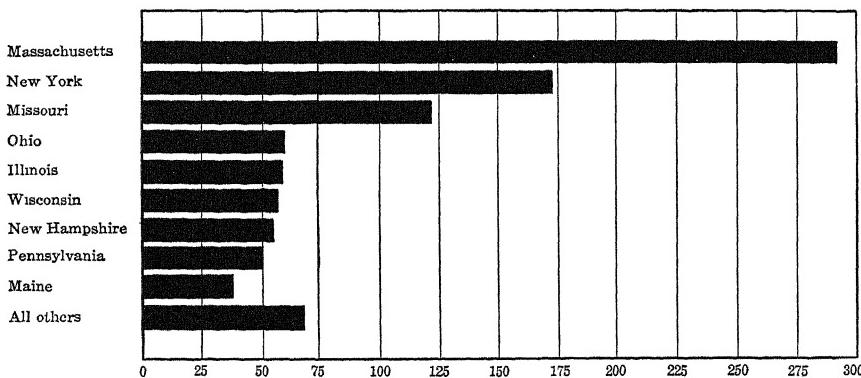


Fig. 135. — Value of the shoes manufactured in the United States in 1923 in millions of dollars.

Atlantic coast, and they have a large market in the parts of the country in which they are located. When the new factories of the western cities were first established, the superintendents, foremen, and many of the workmen were secured from the older factories in the East.

Leadership of the United States in the manufacture of shoes. We not only supply the needs of our own country, but we export our products to seventy-five different countries. Doubtless the United States would export more shoes if we did not send our shoe machinery to many foreign countries. Moreover, the demand for shoes is not so great as that for other articles of clothing, since in the warm countries of the tropics many people go barefoot. Even though the manufacture of shoes is one of our important

industries, the products of our shoe factories make up but a small part of our country's exports.

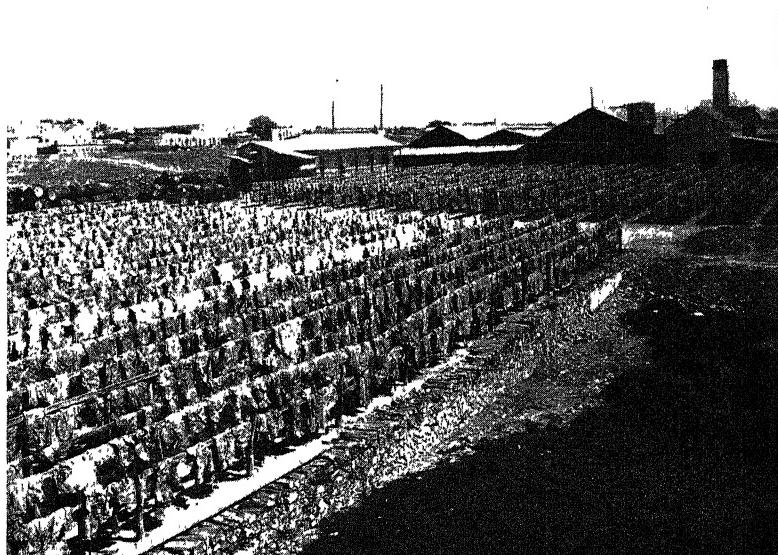
Materials used in making gloves. Many kinds of leather are used in making gloves, but most gloves are made of lambskin. Though we speak of most leather gloves as *kid* gloves, there are not nearly enough kids raised to provide leather for the gloves needed. The finest goods, however, are really made of kid; and the younger the animal, the finer and softer is the glove. Since the least scratch leaves a scar that reduces the value of the hide, the shepherds guard these young animals with even greater care than they do their children. An entire skin is used in making a pair of the long gloves worn by ladies. Two pairs of the ordinary short gloves can be made from one skin. Gloves which we know as dogskin, buckskin, and doeskin are really made of sheepskin.

The center of the glove-making industry is in Fulton County, New York. The industry begun by the Scotch immigrants has grown until more than three-fourths of the gloves manufactured in the United States are made in this county. The gloves made in our country are mostly for men. Many of the finer grades for women are still imported from Europe. Besides importing the manufactured goods, we also import skins used in the industry from Germany, Austria, Sweden, Brazil, and France.

Belting. Whenever we enter a mill or factory, we see many bands, or *belts*, running from wheel to wheel. By means of these belts the power is carried from one part of the building to another. The value of the leather belting made in this country is very great. Not all of this belting is used in our own country. Many thousand dollars' worth are sent to manufacturing countries in all parts of the world.

The United States a leader in the manufacture of leather. The United States leads all other countries in the making of leather. We have had a good supply of hides and skins from the ranches of the West and from the farms of the whole country. We have also imported hides and skins from all parts of the world. We receive buffalo hides from India, calfskins from Russia, Germany, and Holland, cattle hides from Argentina, Uruguay (Fig. 136), and many other countries, horse hides and colt hides from Russia,

and sheep-skins from Australia, New Zealand, South Africa, Argentina, and Russia. Fortunately we have had a ready source of material for tanning in our great forests. The states which have led in the tanning of leather are those which have had quantities of oak and hemlock bark for their tanneries. Hides imported at Boston or New York are often sent as far west as Wisconsin for tanning because there the necessary tanning ma-



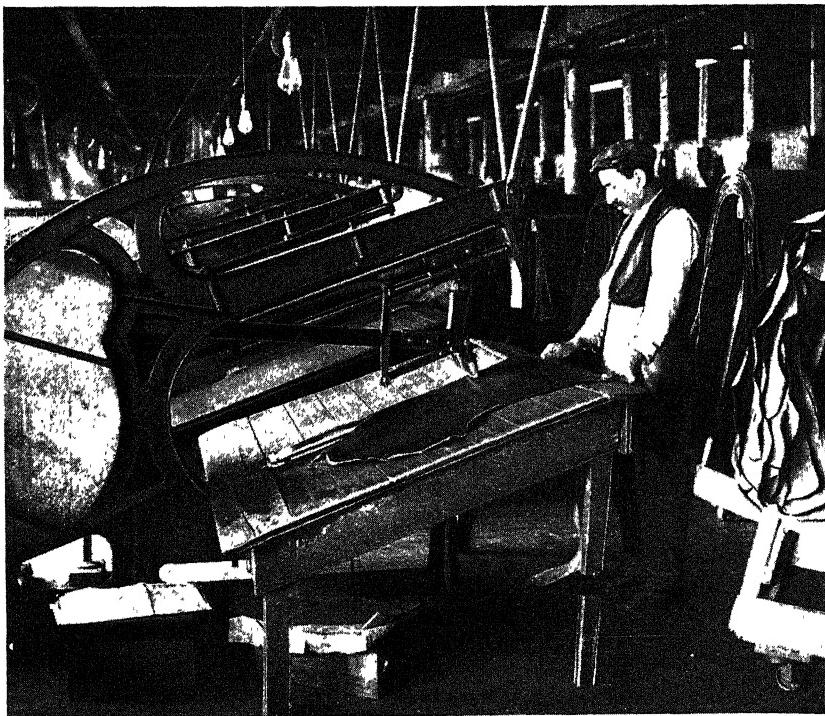
Courtesy Pan-American Union.

Fig. 136.—Drying hides in Uruguay. Before shipping, the hides must be dried or salted to prevent decay. What does the picture tell of the number of cattle raised in this part of South America? Why must the United States import hides?

terials can be obtained. They may then be sent back to the East for manufacture. It is because we have had an abundance of tanning material and because our manufacturers were expert tanners (Figs. 137 and 138) that industrial countries like Germany, France, and Great Britain export hides and skins to the United States and import from this country finished leather.

But to-day tanners are not so dependent upon the forests as in former years. Tanning extracts, that is, *tannin* in condensed

form, are now imported into this country from Argentina, India, and other countries. Besides tannin obtained from plants, mineral substances, such as compounds of chromium, are now used in tanning leather. The process of tanning by means of chromium compounds was developed by manufacturers in Phila-



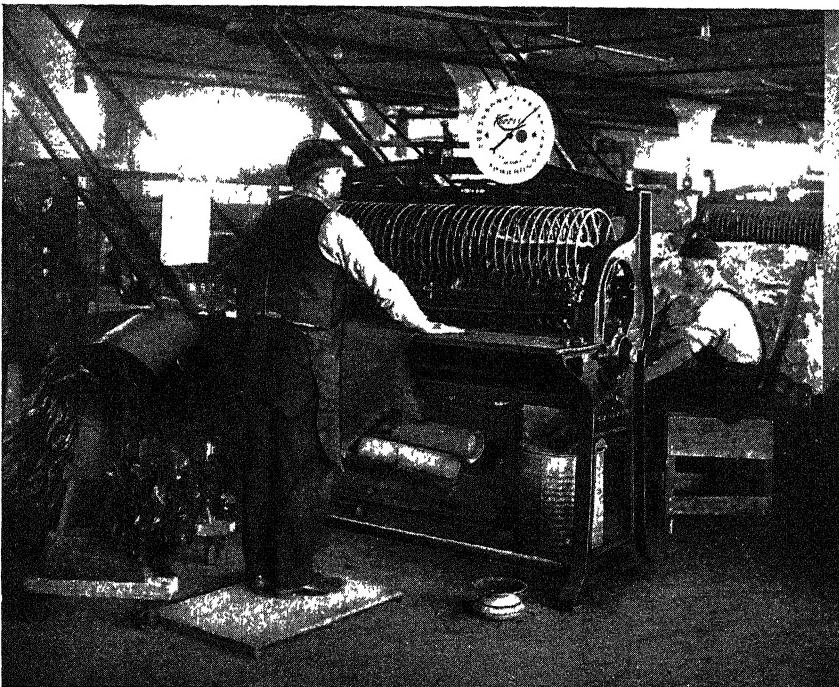
Courtesy A. C. Lawrence Leather Co., Boston.

Fig. 137.—A jacking machine. This machine makes the hide flat and smooth so that it can be split into two thin sheets.

adelphia. Since the discovery of that process that city has led the world in the manufacture of leather. It is therefore no longer necessary for tanneries to be located near large forests.

Why substitutes for leather are used. In recent years the demand for leather has come to be greater than the supply. We therefore find ourselves using many different substances in place of leather. The heels of shoes are often made of wood, metal, or

rubber, and for the soles some substitute is often used. Shoes with tops made of cloth are very commonly worn. For the upholstery of furniture and automobiles substitutes for leather are very generally used. Belts for transmitting power are sometimes made of cotton; sheet iron, wood, and tin have taken the place of leather in making trunks; and cloth, rattan, straw, and other



Courtesy United Shoe Machinery Co.

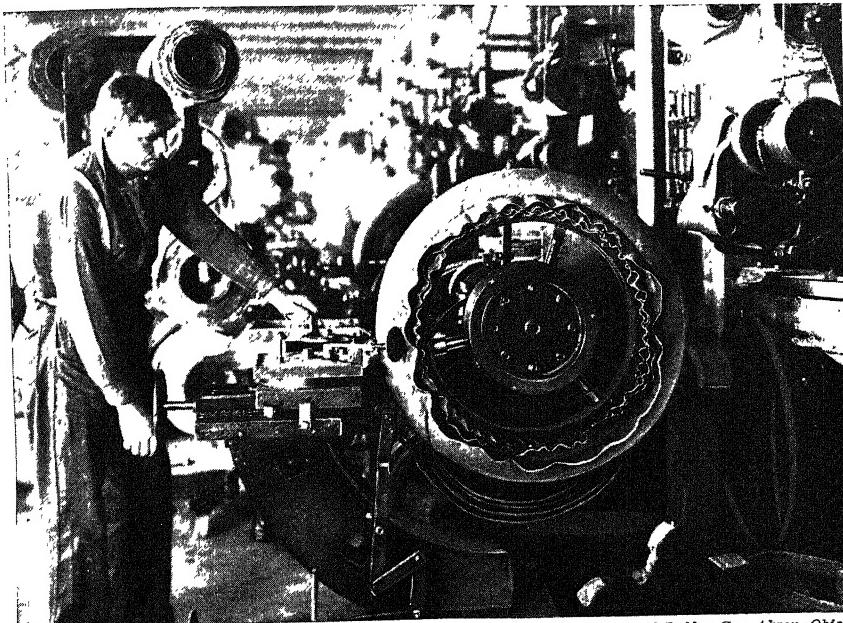
Fig. 138.—Finding the amount of leather in a tanned skin. This machine measures very quickly the number of square feet in a piece of leather of irregular shape. How could the size of each piece be determined without the machine?

substances take the place of the more expensive leather in making traveling bags and suitcases.

RUBBER

Properties which make rubber useful. Rubber possesses properties which make it extremely useful. Because it is flexible and elastic, it is used for making balls, toy balloons, elastic stock-

ings, suspenders, rubber bands, and rings for fruit jars. Because it is waterproof it is used for making boots and shoes, hot-water bottles, rubber hose, raincoats, hats, and blankets. Because it is flexible and durable it is used in great quantities for automobile tires. Because it is a nonconductor of electricity, it is used to cover electric wires and as insulating material in many electrical machines.



Courtesy Goodyear Tire and Rubber Co., Akron, Ohio.

Fig. 139.—Making an automobile tire. Many tires must be made for the millions of cars now in use. No satisfactory substitute has yet been found for rubber in tires used on pleasure vehicles.

The United States uses great quantities of rubber. The United States uses about three-fourths of all the rubber produced in the world. This is mainly because our country manufactures more than eighty per cent of the world's output of automobiles. Our automobile industry alone requires more than half a billion pounds of rubber each year. Akron, Ohio, is the leading city of the country in the manufacture of rubber goods (Fig. 139). The United States consumes more than five times as much rubber as

Great Britain, more than seven times as much as France, and more than twenty times as much as Japan.

Discovery of usefulness of rubber. When white men first visited Brazil, they found the natives playing with balls made by hardening the sap of a tree over a smoky fire. The Indians also made shoes of this material. This was the *rubber* which in later years became so useful to man. Later people in temperate climates learned of its valuable properties. They often asked the captains of vessels to take boots and shoes to Brazil to have them covered with this rubber, which they had found to be waterproof.

Rubber was so named because it was first used as an eraser for "rubbing out" pencil marks. For many years it was not used for other purposes because in warm weather it became soft and sticky, while in cold weather it became hard and cracked easily. In 1842 Charles Goodyear found that by heating rubber and mixing sulphur with it a substance was obtained which was not injured by the heat of summer or the cold of winter. This is called *vulcanized* rubber. Since that time more and more rubber has been used for many purposes.

Difficulties of obtaining Brazilian rubber. Practically all the rubber of Brazil is gathered from trees found scattered through the dense forests of the Amazon Valley. Natives collect the sap, harden it by smoking it over a fire of palm nuts, and then carry it in small boats to steamers, which transport it to the United States and Europe.

It would be much easier and cheaper to gather the sap if the trees grew in large groves by themselves as pine trees or oak trees often grow in our country. Instead, the rubber trees are scattered among many other kinds of trees which do not yield rubber. For this reason the rubber gatherer must cut his way through the dense jungles to find the trees. There are no roads into the dense forest. Therefore rubber can be gathered only from trees which are not far from the rivers, which are the only highways. All the trees must be so near the river that the gatherer can return to his camp on its banks at the close of day.

Since the difficulty of obtaining Brazilian rubber is so great, man has found it cheaper and much more convenient to obtain

rubber from trees planted in regions in which white men can live and in places more accessible than the jungles of the Amazon Valley (Fig. 140).

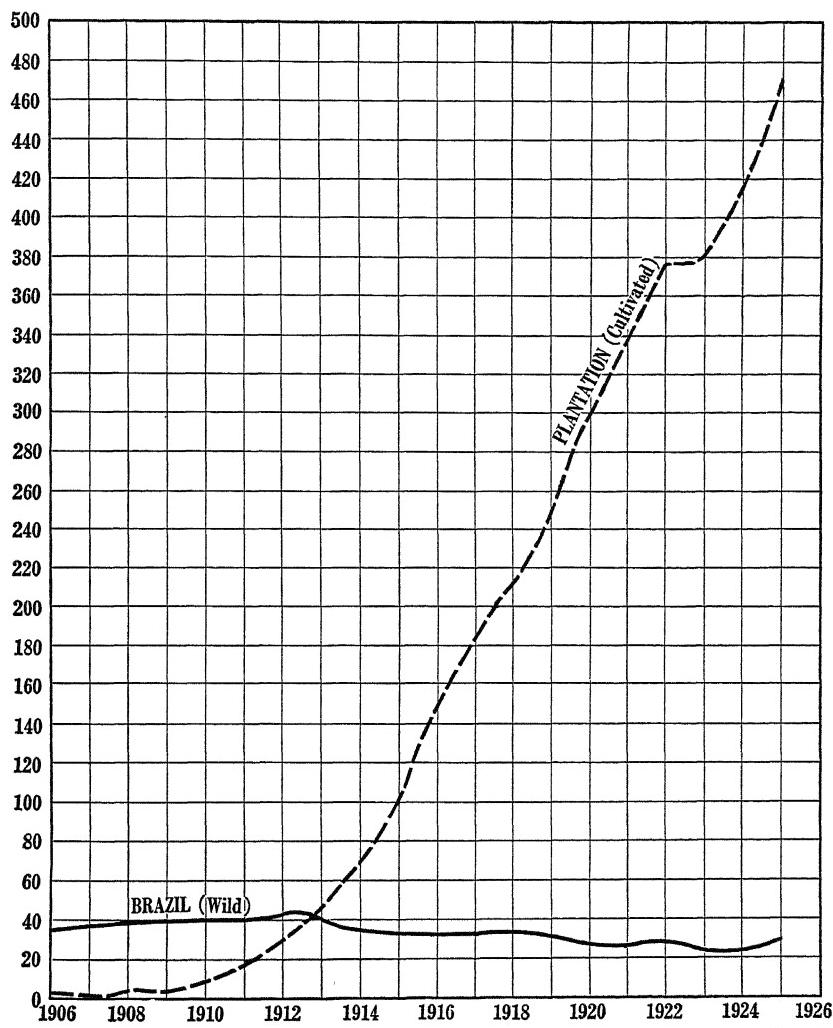


Fig. 140. — Production of Brazilian and plantation rubber between 1906 and 1925 in thousands of tons.

How East Indian rubber competes with Brazilian rubber. In 1875 an Englishman, after long and careful study, decided that it would be possible to grow rubber trees in British India. Un-

known to the Brazilian authorities, he secured a good supply of the seeds of the rubber tree, which he took to England. There the seeds were carefully planted in hothouses. When the plants were well started, they were taken to India and set out. From this small beginning have developed the great rubber plantations of the Malay Peninsula, Ceylon, French Indo-China, and the Dutch East Indies (Fig. 141). It is estimated that the British



Courtesy Goodyear Tire and Rubber Co.

Fig. 141.—Tapping rubber trees on a plantation in the East Indies. Why do you think these trees have been planted? How would you know that this region has a warm climate? Would you rather work on a plantation like this or in the jungles of Brazil? Why?

and Dutch plantations contain more than 300,000,000 rubber trees. To-day more than nine-tenths of the world's rubber is obtained from plantations (Fig. 142).

The United States depends on other countries for rubber. The British and Dutch control the world's supply of rubber. The United States, although it needs larger supplies than any other country, has little territory on which rubber trees can be grown. Our only possessions adapted to the growing of rubber

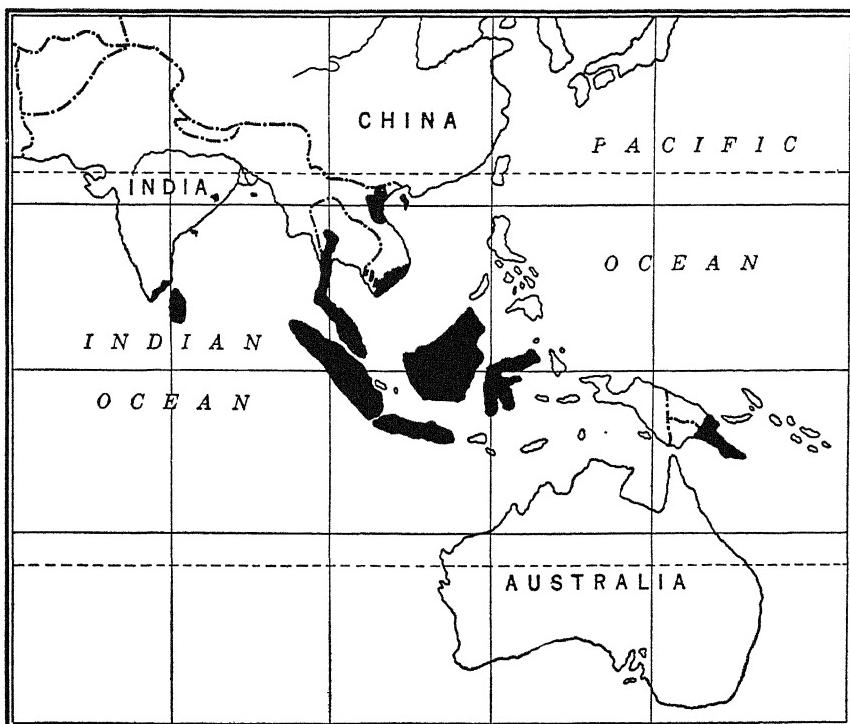


Fig. 142.— More than three-fourths of the world's supply of rubber is produced within the areas shaded on the map. These rubber-producing areas are very largely under the control of Great Britain and Holland.

are the Hawaiian Islands and some of the islands of the Philippines.

The United States Department of Agriculture is about to experiment with rubber trees on the irrigated lands of our southwestern states. If the experiment is successful, we may be able to produce a considerable part of the rubber needed in this country.

QUESTIONS AND PROBLEMS

1. How did the manufacture of shoes in colonial days differ from that of the present time?
2. How has the United States come to be the leading country in the manufacture of shoes?
3. How does the manufacture of shoes in the United States increase the commerce of the country?

4. Why were many tanneries in early days located in New England?
5. Why may tanneries now be located far from forests?
6. Why has rubber so many uses?
7. The United States uses more than four-fifths of the world's yearly output of rubber. What do you think are the reasons for this?
8. What is *vulcanizing* and how does this process increase the usefulness of rubber?
9. How do you account for the great increase in the use of rubber in recent years?
10. Brazil produces a much smaller proportion of the world's supply of rubber than it did fifteen years ago. How do you account for this fact?
11. What can our country do to make itself independent of other countries for its supply of rubber?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the United States locate the chief cities engaged in tanning or in the manufacture of articles from leather.
2. On an outline map of the world show, by pictures, drawing, or shading, the parts which furnish hides and skins. Draw routes from these regions to parts of the United States which you think would import hides.
3. On an outline map of the world color the areas producing rubber. Trace the shortest routes from these regions to New York and San Francisco.
4. Make a rubber chart showing samples of crude and manufactured rubber.
5. Make a collection of pictures showing the gathering, transportation, manufacture, and uses of rubber.
6. Make a list of the many uses of rubber. What property or quality of rubber makes it useful for each article?

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CHAPTER XVI

TRANSPORTATION AND TRADE

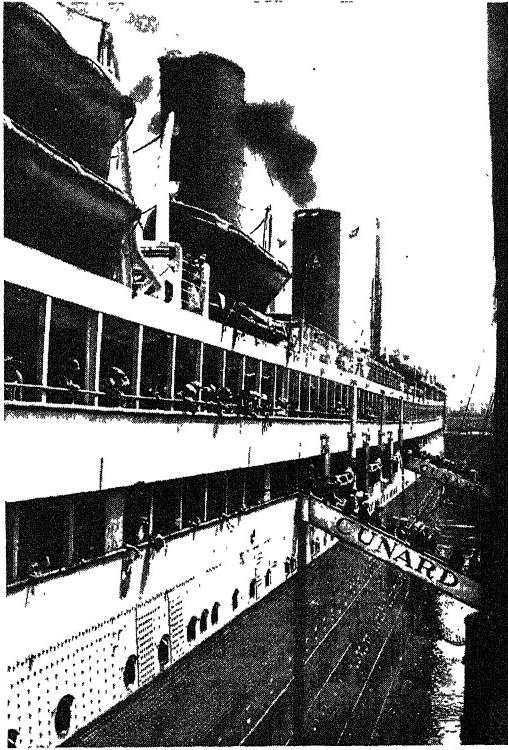
How we depend upon the people of foreign lands. We may not take much interest in the inhabitants of China, Egypt, Japan, Chile, or Australia. Yet the work of the people of these and other countries helps to make our lives more comfortable by providing many of the articles so easily brought to our homes from near-by stores. Of our food the sugar may have come from Cuba or Java, the tea from China or Japan, and the coffee from Brazil. The vegetables may have come from a near-by garden fertilized by nitrate from Chile, potash from Germany, and phosphates from our own southern states.

Of our clothing the wool may have come from Argentina or Australia; the cotton from our southern states, from Egypt, or Peru; the silk from China or Japan; rubber from the Far East; and the skins from which the leather was made from almost any country of the world. We also call upon many people for materials to make our homes. The boards, timbers, or shingles may have come from the southern states or from the Pacific coast; the metals used in heaters, pipes, and wires probably came from the central or western parts of our own country.

Products now carried long distances at little cost. People living in different countries or in different parts of a large country cannot buy and sell to one another unless there are means of carrying goods cheaply from place to place. Before the days of railroads and ocean-going vessels, only the most valuable articles, such as precious stones, silks, and spices, were carried long distances. Now the transportation is so cheap that even coal and bricks are taken by steamers as far as from England to Argentina.

Improvements in ocean transportation. Some of the products of our country exported in colonial days were lumber, fish, furs,

and tobacco. With the exception of vessels bringing new settlers few European vessels came to our shores. Therefore the colonists found it necessary to build vessels themselves to transport their products to Europe or the West Indies and to bring back manufactured articles.



Courtesy Cunard Steamship Co.

Fig. 143.—Passengers disembarking from an ocean liner at New York. This great liner plies between New York and Liverpool, carrying thousands of passengers and many thousand tons of freight on each trip.

this (Fig. 143). We can probably get a better idea of the real size by knowing how large a cargo can be carried. The cargo often consists of a great variety of articles. Here is a list of the commodities making up the bulk of the cargo of a ship that recently left an Atlantic port for Rotterdam :

In those days there were no steamships and all business had to be done in small sailing vessels. Of course it took these ships much longer to make their voyages than it does the modern steamship. When Benjamin Franklin sailed across the Atlantic to England as agent for the colonies, he was over thirty days making the passage. The schedule time for many of our great trans-Atlantic passenger steamers is between five and six days. Have you any idea how large a great ocean steamer really is? Five or six hundred feet is a common length for ships of this kind, and they are often much larger than

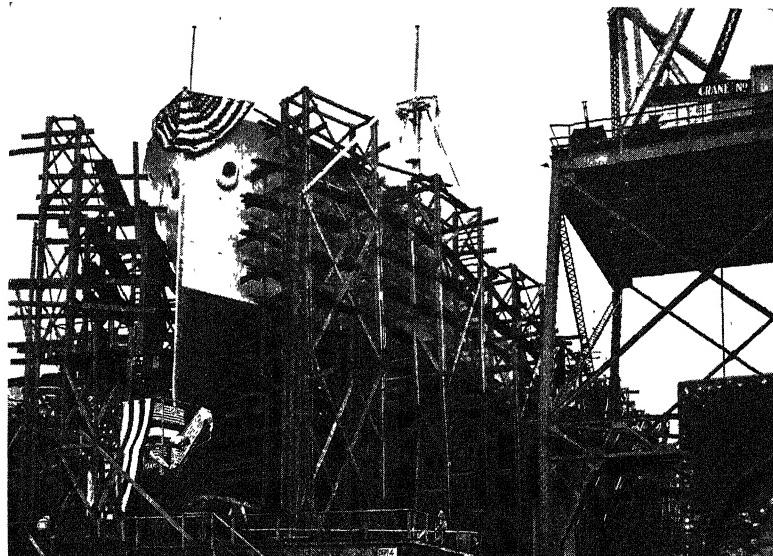
Barley . . .	13,570 bu.	Beef . . .	25 tierces (casks)
Flour . . .	238 sacks	Lard	1,400 boxes
Oatmeal . . .	2,940 sacks	Oleo oil	21,774 lb.
Wood pulp .	1,120 pkgs.	Wheat	41,519 bu.

If this cargo were to be placed in freight cars on arrival in Rotterdam for distribution through Europe, it would take about sixty cars to carry it. Therefore, when a moderate-sized freighter like this one leaves an American port, it is about equal to the departure of a freight train of the above length. When we compare this with the size of the cargo taken by the small boat of colonial days, we see what a tremendous increase there has been in the carrying power of the ships of to-day. We must remember, too, that these modern freight carriers can make several voyages across the ocean while a little sailing vessel is making one. Our steamships are generally provided with cold-storage plants, so that fruits, meats, butter, eggs, and other perishable articles may be taken with safety. This means that many kinds of food can be taken quickly and cheaply to all parts of the world. Cargoes of frozen beef or mutton are brought to us or sent to Europe from Argentina, Australia, or New Zealand. Ability to transport foods in this way has greatly reduced the danger of famines.

The American merchant marine. After the United States government was established, laws were passed which favored the carrying of imported goods in American vessels. That is, the tariff, or duty, on imported goods was less when imported in American vessels than when carried in foreign vessels. These favorable laws and the abundance of timber along our coasts encouraged shipbuilding so that in 1810 more than ninety per cent of American imports and exports were carried in our own ships. At the time of our Civil War, however, many of our vessels were lost and foreign ships, especially those of Great Britain, gained control of the trade. England with her vast quantities of coal and iron and her cheaper labor could build steel ships at less cost than they could be built in our shipyards (Fig. 144).

Another reason for the decline of American shipping was the

opportunity offered by the development of the great resources and railroads of the country. Capital received larger returns in those undertakings than could be had by building ships. As a result of these causes, American goods were carried to and from foreign countries very largely in foreign ships. Because of this condition the World War found us practically helpless and de-



Courtesy U. S. Steel Corporation.

Fig. 144.—A steel steamship being built for the United States Government. Our government now owns and operates many freight and passenger ships which sail to all important ports.

pendent upon other countries for ocean transportation. After our entry into the war, shipyards were hurriedly established wherever opportunity offered to build vessels for the transportation of soldiers and supplies and to replace ships sunk by German submarines. Yards which had not built a ship for scores of years, together with many new yards, were set to work on both wooden and steel vessels. It is not likely that we shall ever again allow ourselves to become so dependent upon other nations for our transportation.

How goods are transported within our country. In colonial days and up to 1825 all foreign trade was carried on by those sections of our country bordering the Atlantic coast. There was no way of carrying products to or from the interior. The opening of the Erie Canal in 1825 was the first means of bringing the farm products of the West to the eastern states and to the coast. The building of the Erie and other canals to connect the East and West



Fig. 145.—Distribution of railroads throughout the United States. Why are there many railroads in the central and eastern parts of the country? Why fewer railroads in the western part?

was soon followed by the building of railroad lines along the same routes.

Our railroads have revolutionized overland transportation. All kinds of goods are now quickly sent from one region to another. It is interesting to read of the long stagecoach journeys of the early days and contrast them with our modern methods of travel by train. In colonial times it took three or four days to go from Boston to Philadelphia by coach. The trip can now be made in eight hours.

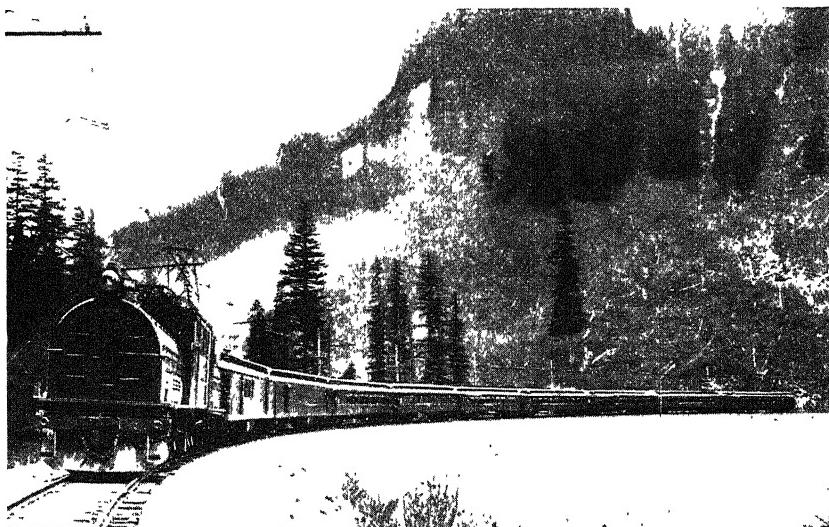
Effect of railroads and canals upon the development of the country. These canals and railroads had great effect upon the regions connected. Because a market was opened up for the produce of the western farms, agriculture developed rapidly in that region. The eastern states found it more profitable to buy the cheap grains and meats of the West than to raise them themselves. The people of the East, therefore, turned their attention to manufacturing and commerce, and the people of the interior to the development of their farms. Since the products of the Middle West are also shipped to Europe, the railroads and canals connecting our Central Plains and the Atlantic coast have been almost as helpful to the people of Europe as to ourselves. Because they have been able to obtain cheap food from America, they too have given relatively less time to agriculture and more attention to manufacturing and commerce.

Cheap transportation causes division of labor. Without transportation any section of a country must produce everything which it needs. The copper Eskimo, for example, must get all his food, clothing, and the material from which he builds his house in the place in which he lives. All parts of our country are connected by railroads. This makes it possible for the Middle West to raise grain and cattle for the whole country, for the South to produce cotton for all the cotton mills, and for the northeastern states to manufacture the greater part of the textiles and shoes. Oranges and other fruits from California and Florida are sent in perfect condition in refrigerator cars to all parts of the country.

How our great railroad lines help travel and trade. Great railroad lines now run entirely across our country, connecting the Atlantic and the Pacific states (Fig. 145). When in 1849 and 1850 the people of the East rushed to the gold deposits of California, they were obliged to make use of the "prairie schooner" drawn by oxen or horses or to travel by sailing vessels around Cape Horn. Either route took months for passage. Now one can travel from coast to coast in comfort in less than four days (Fig. 146).

Cotton intended for Japan may be sent to Seattle by rail and

shipped from that port. Tea imported from China and Japan may be brought by steamer to Pacific ports and then taken by train to the central and eastern parts of the country. When carried by this route, the cost is slightly more than when the tea is brought to Atlantic ports by way of the Suez or Panama Canal. Whole trainloads of soy-bean oil imported from Manchuria are taken from Pacific ports to the soap factories of the



Courtesy Chicago, Milwaukee and St. Paul R.R.

Fig. 146.—An electric locomotive drawing a train over the passes of the Rocky Mountains. Mountain streams supply abundant power from which electricity can be generated. Much coal is saved that would otherwise have to be used in hauling heavy trains over the steep grades.

Middle West. Without these transcontinental lines and the shorter lines running to all parts of the country, it would be absolutely impossible for our country to be the great producing region that it is. Because our country is so large, our need of railroads is greater than that of many of the smaller countries of Europe. From some of our great cities these roads radiate in all directions. Chicago has become the greatest railroad center in the world.

No other country has so many miles of railroad as the United

States (Fig. 147). We have one and one-half times as many miles as all Europe. If the total mileage were made into one road, it would extend around the earth ten times or a distance about equal to that from the earth to the moon. These roads are all busy transporting the necessities of life for our own people and those of other nations. If there were no railroads, we should be obliged to depend upon rivers, lakes, and canals, as did the people of 1825. That would, of course, be a great hardship, since rivers and lakes make it possible to carry the goods only to those places situated

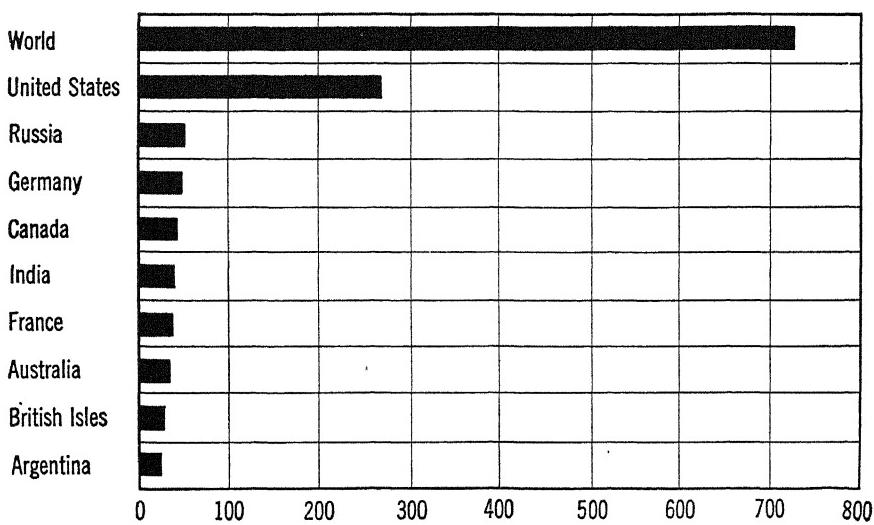
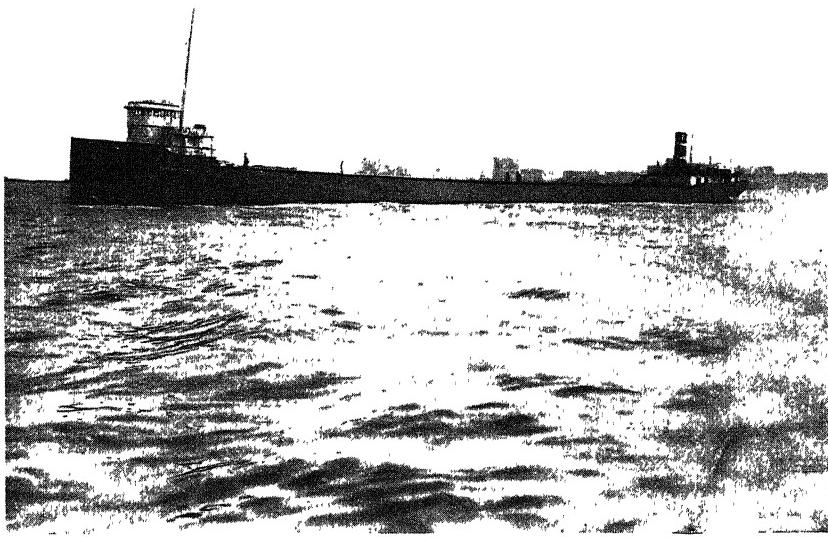


Fig. 147. — Railroad mileage of the world in thousands of miles.

on or near them, and generally only in the warm season of the year. The lakes and rivers are still of great use in transporting the products of our country.

The commerce of the Great Lakes. The commerce of the Great Lakes is enormous. It is even greater than the total foreign commerce of so great a nation as France. Great quantities of iron ore, wheat, lumber, and coal are shipped across the lakes (Fig. 148) to the railroad terminals. The commerce of the Great Lakes has led to the development of many important lake ports. The leading cities that are on or very near the lakes are Chicago,

Detroit, Cleveland, Buffalo, Milwaukee, and Duluth. The cities on Lakes Erie and Michigan receive iron ore from Duluth and from other ports of Lake Superior. In return Duluth receives coal from the Appalachian coal fields by way of the ports of Lake Erie. In what direction do you think wheat and lumber will be carried over the lakes?



Courtesy Duluth Chamber of Commerce.

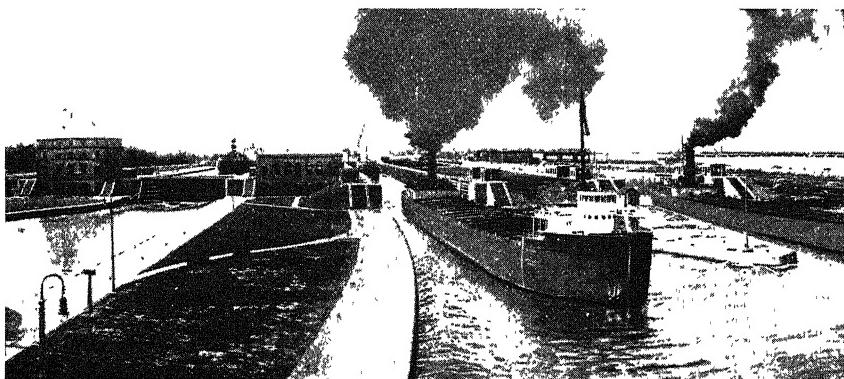
Fig. 148.—A freighter on Lake Superior near Duluth. Much wheat and lumber as well as iron are shipped to eastern ports. The lakes are closed by ice for several months in the winter.

The smaller ocean steamers sometimes ascend the St. Lawrence River and by means of canals (Fig. 149) reach the great shipping ports of Lake Superior. Very few ocean-going steamships, however, reach the Great Lakes. They nearly always receive their cargoes from this region at ports on the Atlantic coast or the St. Lawrence. Plans have been made for deepening the canals and

rivers leading from the Great Lakes to the Atlantic so that even the large ocean steamers may reach the Lake ports.

CHIEF PORTS OF THE UNITED STATES

New York City, our greatest port. New York is the chief industrial and commercial city of the United States and one of the greatest seaports in the world. Its total exports and imports per year are valued at more than \$4,000,000,000. Steamship lines connect it with all parts of the world. Railroads and steamers transfer its goods to and from all parts of the United States.



Courtesy Civil and Commercial Association.

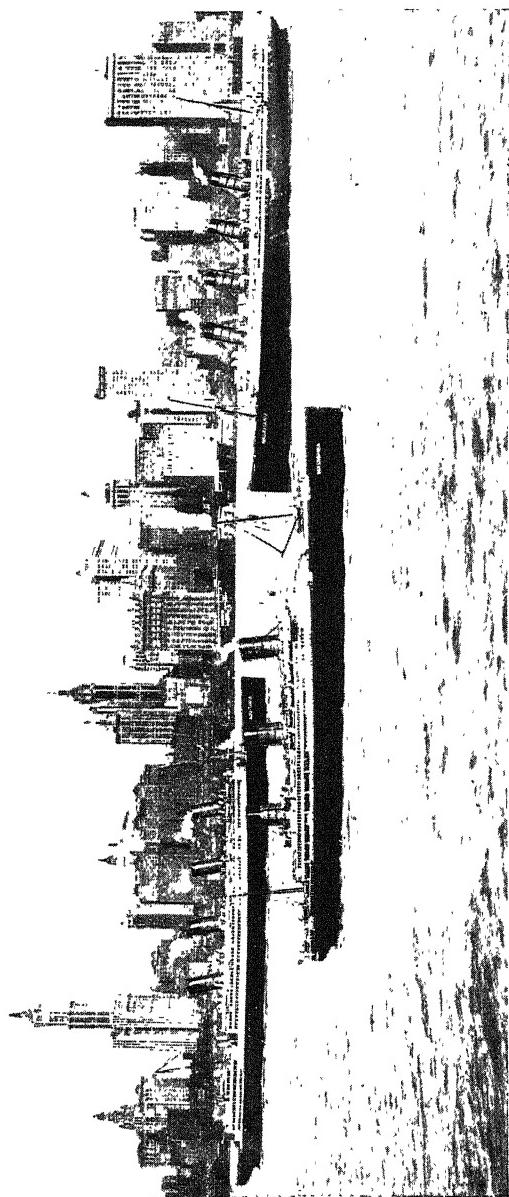
Fig. 149.—Locks of the "Soo" Canal. This is one of the busiest canals in the world. The most important commodity carried through the canal is iron ore on its way from the western end of Lake Superior to the southern shores of Lakes Erie and Michigan. Coal is carried on the return trip.

Being situated on a number of islands and peninsulas, it has a very extensive water front (Fig. 150) along which a great many docks and storehouses have been constructed. Its harbor has a depth of water sufficient to accommodate the largest ships. It is one of the American ports nearest the countries of northern Europe which, though small, constitute the most important group of commercial countries in the world.

New York is situated near the middle of the Atlantic coast and can therefore readily carry on trade with the Atlantic states both to the north and to the south. It has easy access to rich mines of coal in the Appalachian Highland and therefore has abundant

Courtesy Canada Steamship Co.

Fig. 150. — Part of the water front of the largest city in the New World. Imports received at New York are sent to all parts of the country. Products of all kinds from all parts of the United States are shipped from this port to all parts of the world.



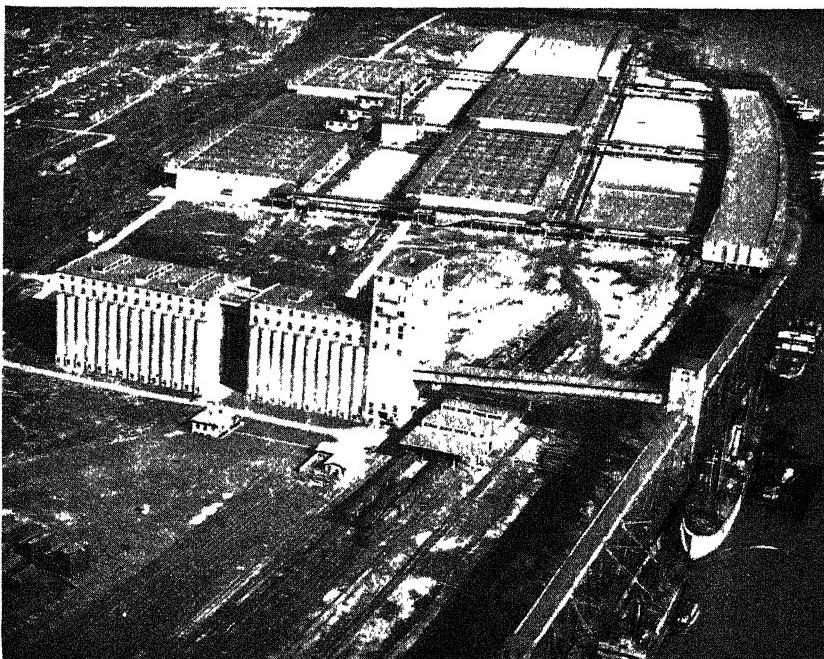
fuel for its industries and for its ships. It is the chief port for the northeastern states. These states have many large industries and many people and therefore have great need for carrying on trade with other ports of the world.

But probably New York's chief advantage lies in its easy access to the Middle West through the Hudson and Mohawk valleys. At first the Erie Canal and later the railroads brought to New York more trade from the rich agricultural and industrial states of the Central Plains than to any other port of the country. Thus we find more of the grains and animal products of the country being sent out from New York than from any other port of the United States.

Since goods are constantly passing through New York to all parts of the world, this becomes an excellent place to buy and sell raw materials and manufactured goods of all kinds. It is for this reason that the city has become the largest manufacturing city in the country. Other advantages offered for manufacturing are the supplies of coal in neighboring states and the cheap labor furnished by the immigrants that come to the city by the thousands each year. The factories and workshops turn out a countless variety of products. Some of its most important industries are the manufacture of clothing, the publishing of books and magazines, and the refining of sugar.

Other Atlantic ports. The other principal ports of the Atlantic coast are Philadelphia, Boston, Baltimore, Charleston, Savannah, Norfolk, and Portland, Maine. The commerce of all these cities combined is very much less than that of New York alone. Boston imports raw materials for industrial New England. Her imports usually exceed her exports both in quantity and value. Baltimore, Philadelphia, and Norfolk, situated within easy reach of the coal fields, have good locations for exporting coal and for importing ores to be smelted. These ports also send and receive a great variety of other products. Charleston and Savannah are mainly exporting cities, their principal output being cotton and lumber. Portland, Maine, receives for export wheat and other products from Canada. The greater amount passes through Portland in the winter when the St. Lawrence River is frozen.

The Gulf ports. New Orleans (Fig. 151), Houston, Mobile, and Galveston (Fig. 152) are the chief ports of the Gulf states. All these cities owe their growth very largely to their trade in cotton. The commerce of New Orleans and Galveston is large. In 1923 the foreign trade of New Orleans was second only to that of New York, while the trade of Galveston was exceeded only by

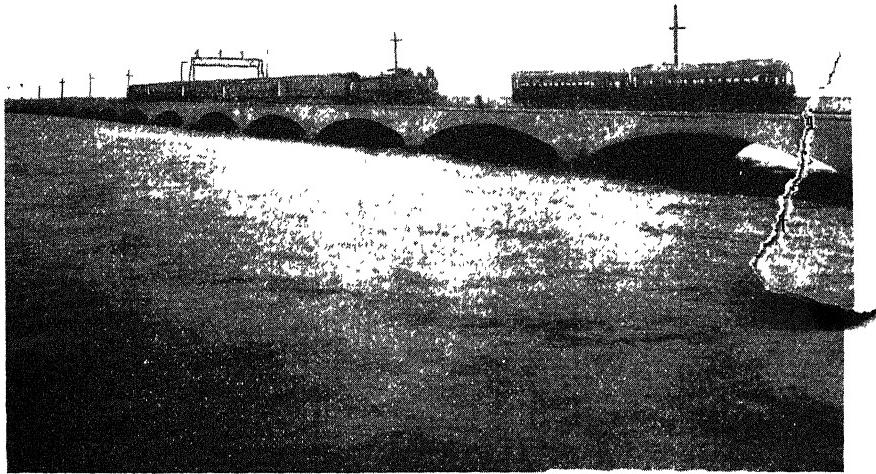


Courtesy New Orleans Association of Commerce.

Fig. 151.—A part of the water front at New Orleans. Near the front of the picture is a large grain elevator owned by the city of New Orleans. Farther back is a great cotton warehouse owned by the state. Both city and state governments are aiding the growth of the port.

that of New York, New Orleans, Philadelphia, and San Francisco. The construction of a ship canal from Houston to Galveston has greatly increased the commerce of Houston. All the ports of the Gulf coast are favorably situated for trade with Latin America. The opening of the Panama Canal brought important world trade routes within easy access of these cities and is likely to increase their future importance.

Pacific ports. Seattle, Tacoma, Portland, San Francisco, and Los Angeles are the chief ports of the Pacific coast of the United States. San Francisco has a central location on the coast, a fine harbor (Fig. 153), and the productive valley of central California to supply its exports and to receive its imports. Seattle carries on



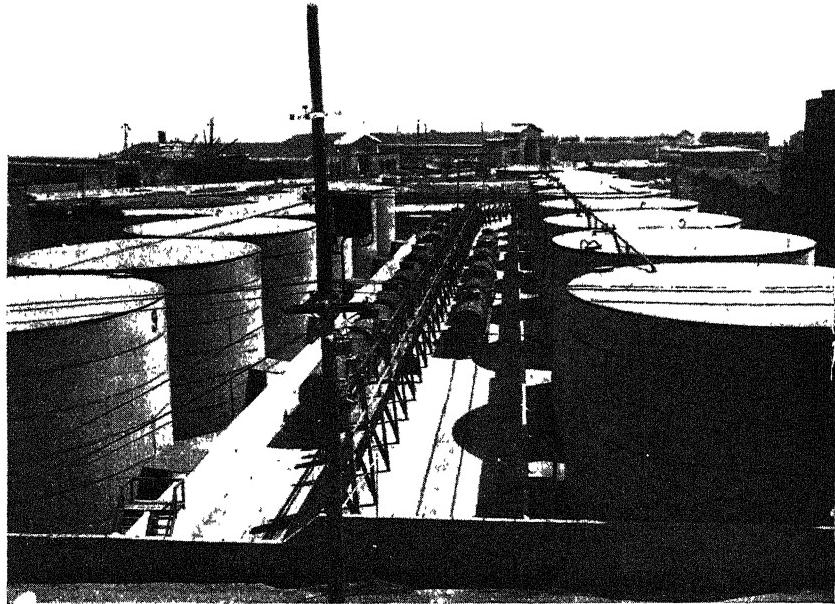
Courtesy Galveston Chamber of Commerce.

Fig. 152. — Trains passing over the causeway or bridge which connects Galveston with the mainland. Galveston was built on an island in order that the many large ships sailing from this part of Texas might have deeper water.

a large trade in fish and lumber. Much of Alaska's trade with the United States passes through the port of Seattle. Los Angeles is a rapidly growing city and therefore requires many imports. Probably no other city receives so much lumber as Los Angeles. Pacific coast cities carry on a large and growing commerce with the countries of Asia. This trade is bound to become more

and more important as the resources of China and Japan are more fully developed.

The cities of the Pacific coast lack some of the advantages of the ports on the Atlantic and the Gulf. The areas from which they receive products for export and to which they send imported



Courtesy San Francisco Chamber of Commerce.

Fig. 153.—Large tanks on the wharves at San Francisco in which vegetable oils are stored. This is the largest storage plant of its kind in the United States. The United States imports soy-bean oil, coconut oil, and palm oil, besides other vegetable oils.

articles have relatively small populations: These ports are separated by mountains and deserts from the central and eastern parts of the country, so that communication with those areas is made difficult. Furthermore they are far away from the great commercial countries of Europe, which are much more easily reached from the Atlantic and Gulf coasts. The rapid growth,

however, of Pacific coast cities shows that they are taking full advantage of their many valuable resources.

QUESTIONS AND PROBLEMS

1. How are you dependent upon the people of foreign lands?
2. How has the increase in the size and speed of ships affected commerce?
3. For many years the greater part of American goods was carried in foreign ships. Why was this done?
4. Why should our country have a large number of merchant vessels of its own?
5. Show how the Erie Canal and the building of railroads helped to develop both our eastern states and the Middle West.
6. Why did the people of the eastern states raise less grain and fewer cattle after the great railroads were built?
7. Why does our country need railroads more than do the small countries of Europe?
8. How would the business of the East and the Middle West be affected if large ocean vessels could reach all ports on the Great Lakes? Why?
9. Why has each of the following cities become important: Chicago? Cleveland? Duluth? Buffalo?
10. Why is the commerce of New York greater than that of any other city of the United States?

SUGGESTED PROJECTS AND EXERCISES

1. Make a collection of pictures showing the improvement in methods of transportation from a pack on the back of man to present-day methods. Make a collection of pictures showing the various modes of transportation in all parts of the world to-day. Make a collection of pictures showing the kinds of power used in transportation.
2. On an outline map of the world draw the route which cotton takes from New Orleans to Japan by the way of Seattle. Trace tea from Japan to Boston by the way of San Francisco. Trace soy-bean oil from Manchuria to Chicago by way of Seattle.
3. On an outline map of the United States draw routes connecting the chief ports of the United States with foreign ports. Indicate products carried in each direction.
4. Make a collection of clippings, articles, and advertisements relating to each of the great commercial cities of the United States.
5. Select two cities and let the class debate as to which has the greater advantages and which will have the greater trade in the future.

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CHAPTER XVII

OUR TERRITORIES AND DEPENDENCIES

Our few possessions. The territories and dependencies of the United States are few in number and of small area as compared with the vast possessions of Great Britain. A few, such as Alaska, the Philippine Islands, and the Hawaiian Islands, are of considerable value for their products. The smaller islands are of value chiefly as naval bases or as coaling stations.

ALASKA

Was Alaska a bargain? When Russia offered to sell us Alaska there was much opposition to the purchase. Some people declared that the only resources of the region were polar bears and icebergs. The trade was finally made, however, and Alaska became ours for \$7,200,000. Let us see how our purchase has paid for itself many times over in minerals, fish, and furs. In years to come other resources, such as coal, lumber, and even farm products, will no doubt bring us many millions more.

The minerals of Alaska. From the time of the purchase of Alaska in 1867 to the present time, gold, silver, copper, and other minerals have been taken from the mines of the territory to the value of more than \$500,000,000. Until 1918 the value of the gold obtained was about three times that of the copper, but in more recent years the value of the copper has exceeded that of the gold.

Gold, silver, copper, and other minerals occur in many parts of the territory. There is little doubt that these mines will yield large returns for many years to come. The greatest amount of the gold is now being obtained from the Yukon Valley and the Seward Peninsula. Some of the richest copper deposits are in the valley of the Copper River and near Prince William Sound.

The United States Government has spent fifty million dollars in building a railroad from Seward to Fairbanks. Improvement in methods of transportation will aid greatly in developing Alaska's resources.

Fisheries. In the chapter on fishing we have already learned of the great value of the salmon and seal fisheries of Alaska. The



Courtesy Seattle Chamber of Commerce.

Fig. 154.—A herd of Alaskan reindeer. It has been estimated that Alaska has pasture for 30,000,000 reindeer, from which 900,000,000 pounds of meat could be marketed each year.

value of the fish caught in Alaskan waters in some years is twice as great as the value of the gold and copper mined. The income from seals is much less than that from the mines or the salmon fisheries.

Coal and lumber. Alaska has other resources which have been only slightly developed. The country has large deposits of coal, which are helping to develop Alaska itself and will doubtless aid in the growth of the industries and trade of the whole of the

western coast of North America. The territory also has large forests of spruce and other woods. These forests will be in great demand for making pulp as the supplies in the United States and Canada are reduced. Alaska spruce, because of its toughness, is well adapted to the making of frames for airplanes.

Reindeer. The United States has imported reindeer into Alaska from Siberia (Fig. 154). They were taken there for the purpose of aiding the natives in making a living. The numbers have increased from the 1280 imported by the government to more than 300,000. It is believed that in the future much reindeer meat will be sent from Alaska and northern Canada to the more densely settled parts of Canada and the United States.

Agriculture. In the southern and southeastern parts of Alaska grains and vegetables may be raised in abundance. The greatest obstacle to the development of agriculture in this part of the territory is the lack of good markets for products. The towns and cities of Alaska are not large. Even Juneau, the capital, has a population of only three thousand. The population of the whole territory is only 55,000. Thus we see that Alaska offers little market for farm products, and other markets for these products are too far away to make transportation profitable.

THE PHILIPPINE ISLANDS

The Philippine Islands came into the possession of the United States as a result of the war with Spain in 1898. After years of misrule the islands were in a very backward condition. Under United States control there has been marked improvement in the schools, in the health of the people, and in the way in which the industries are carried on. It is clearly the duty of the United States to retain the islands until they are able to manage their own affairs wisely. If we withdraw, it is quite possible that they may be seized by some other nation which would be interested mainly in consuming their resources and in controlling their trade. Our control of the Philippines gives us a keen interest and much influence in the affairs of the Far East.

Products of the islands. The products are almost wholly agricultural. Sugar, tobacco, and rice are important crops

(Fig. 155). When the islands belonged to Spain sugar was the chief product. Later the great demand for binder cord used in tying sheaves of wheat caused the export of Manila hemp to exceed that of sugar. Since 1920, however, sugar has again taken first place as an export. Sugar is now refined in the islands.



Courtesy Philippine Bureau of Science

Fig. 155.—Terraces on the Philippine highlands on which rice is cultivated. Great patience and skill are required to build these terraces and to direct the water so that each plot shall receive its proper share.

The sugar and tobacco exported each year is valued at more than \$20,000,000.

Manila hemp gets its name from the chief city of the islands. The hemp is obtained from the pithy stalk of the wild banana plant (Fig. 156). The fibers are soft and flexible, very strong, and often as much as twelve feet in length. They are the best fibers

known for making strong rope. The natives of the Philippine Islands cultivate the plant, separate the fibers from the stem, and after drying them, bind them in large bundles for export. The Philippine Islands are the only part of the world where this kind of hemp is prepared and exported. The United States consumes more than half of the Manila fiber produced.

Copra, the dried fruit of the coconut, has long been an important export of the Philippines. The oil obtained from the copra



Courtesy Philippine Bureau of Science.

Fig. 156. — Separating Manila fiber from the stalk of the plant. The long, strong fibers are the very best material for making rope.

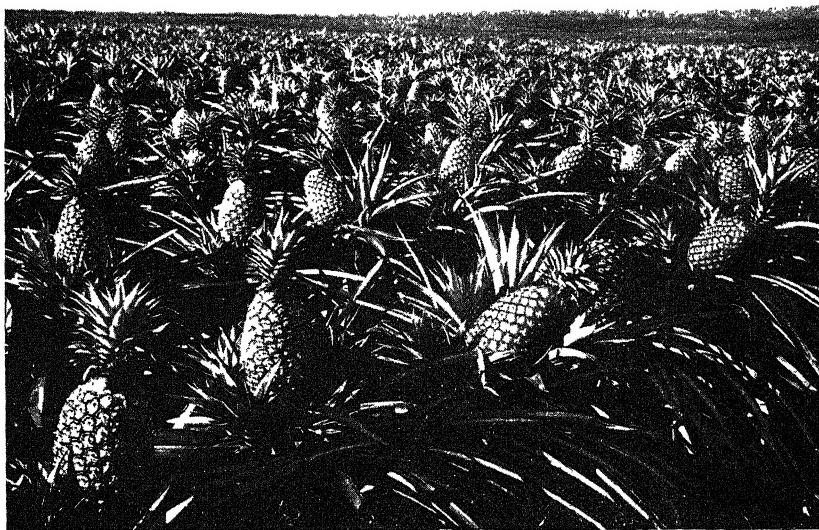
is an increasingly valuable article of commerce. Much of the oil is now extracted by Philippine mills. In 1925 the value of the coconut oil exported to the United States was second only to that of sugar.

Since the Philippines came into the possession of the United States our trade with the islands has greatly increased. In 1900 Philippine trade with the United States was valued at about \$10,000,000, while in 1925 the trade had increased to \$170,000,000. Besides the products already mentioned the United States buys

from the Philippines embroideries, laces, hats, lumber, fruits, gums, pearls, and pearl buttons. In return we sell to the islands cotton manufactures, iron and steel products, wheat flour, and meat and dairy products.

THE HAWAIIAN ISLANDS

The Hawaiian Islands were at their own request annexed to the United States by Act of Congress in 1898. As soon as the



Courtesy Association of Hawaiian Pineapple Canners.

Fig. 157.—Close view of a large field of Hawaiian pineapples. The raising of pineapples is second only to the sugar industry. Approximately 8,750,000 cases are canned annually.

Philippines came under our control the value of the Hawaiian Islands to the United States became more evident. Many of the chief steamship routes of the Pacific Ocean pass near them. For this reason their harbors serve us as naval bases and coaling stations. In case of war they would be of great service in the defense of our western coasts.

The chief products of the islands are sugar and pineapples

(Fig. 157). Much of the sugar is sent to San Francisco to be refined. Pineapples both fresh and canned are shipped in large quantities to the United States. The pineapple pack of 1923 is estimated at 120,000,000 cans valued at \$28,000,000. Many acres that were formerly used for pasture because too dry for sugar cane are now devoted to the raising of pineapples. Two other important products, though of smaller proportions, are bananas and coffee.

The progress of the islands is favored by the increasing number of ships calling at the ports. Both the imports and the exports of the islands for 1923 were double those of 1913. The improved means of communication, the warm, even climate, the excellent ocean bathing, the different type of scenery, and the tropical vegetation, combined with an ocean voyage of five or six days from the Pacific coast are increasing the popularity of the islands as a resort for tourists.

OTHER DEPENDENCIES OF THE UNITED STATES

The other islands in the Pacific Ocean belonging to the United States are Guam and Wake islands, the Midway Islands, and four of the Samoan Islands. The Panama Canal Zone, Porto Rico, and the Virgin Islands, the latter purchased from Denmark in 1916, also belong to the United States. All the islands are valuable mainly as naval bases, coaling stations, or cable or radio stations. The islands of the West Indies would also be useful in defending the Panama Canal.

QUESTIONS AND PROBLEMS

1. Which of Alaska's resources do you consider the most valuable? Why? Which of the resources is likely to be most valuable in the future?
2. What do you think is the greatest difficulty in the development of Alaska's resources?
3. Of what special value are the Virgin Islands to the United States?
4. Do you think the United States should give up all claims to the Philippine Islands? Why?
5. For what reasons do you think the Hawaiian Islands a valuable possession of the United States?

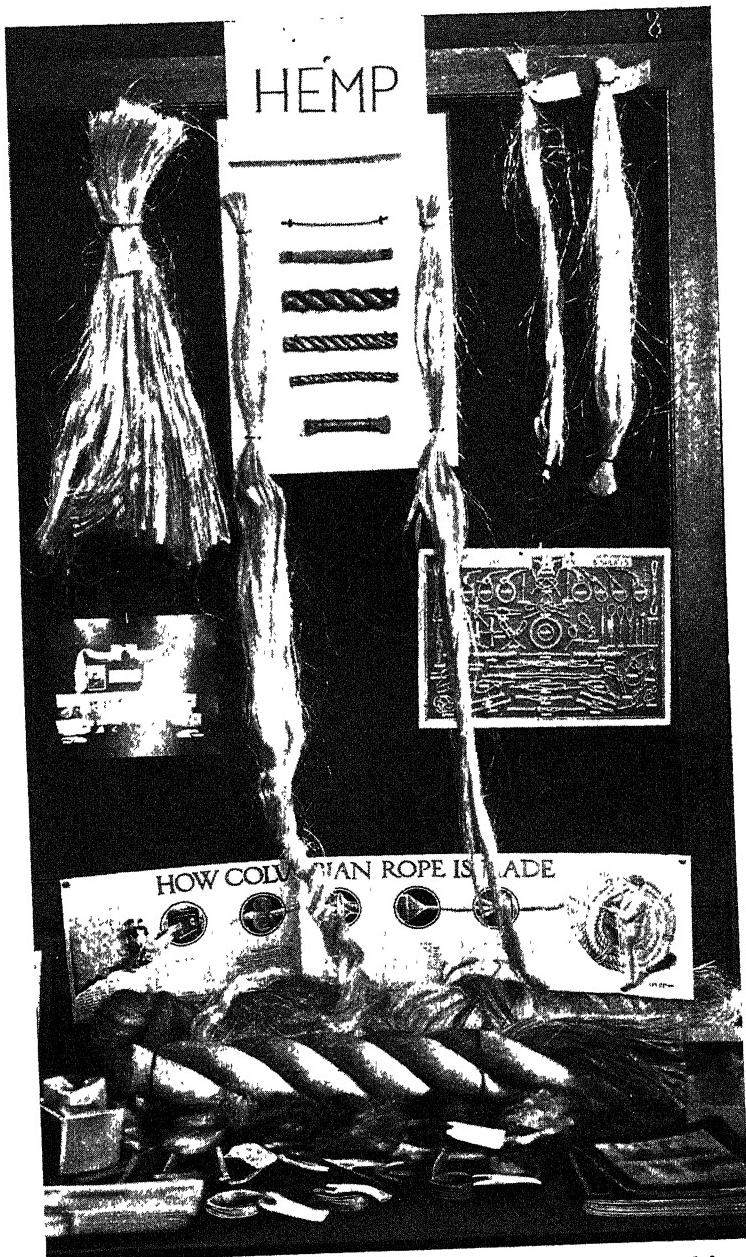


Fig. 158.—Here is a collection showing the different materials used in making rope. Can you make a similar collection? From what parts of the world does each come? Where are they manufactured?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the world color all possessions of the United States. Near each possession make a list of the ways in which that possession is of value to our country.
2. On the same outline map draw the chief steamship routes between the United States and its possessions. Make a list of the products sent in each direction over these routes.

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PART III
EUROPE AND EUROPEAN COLONIES

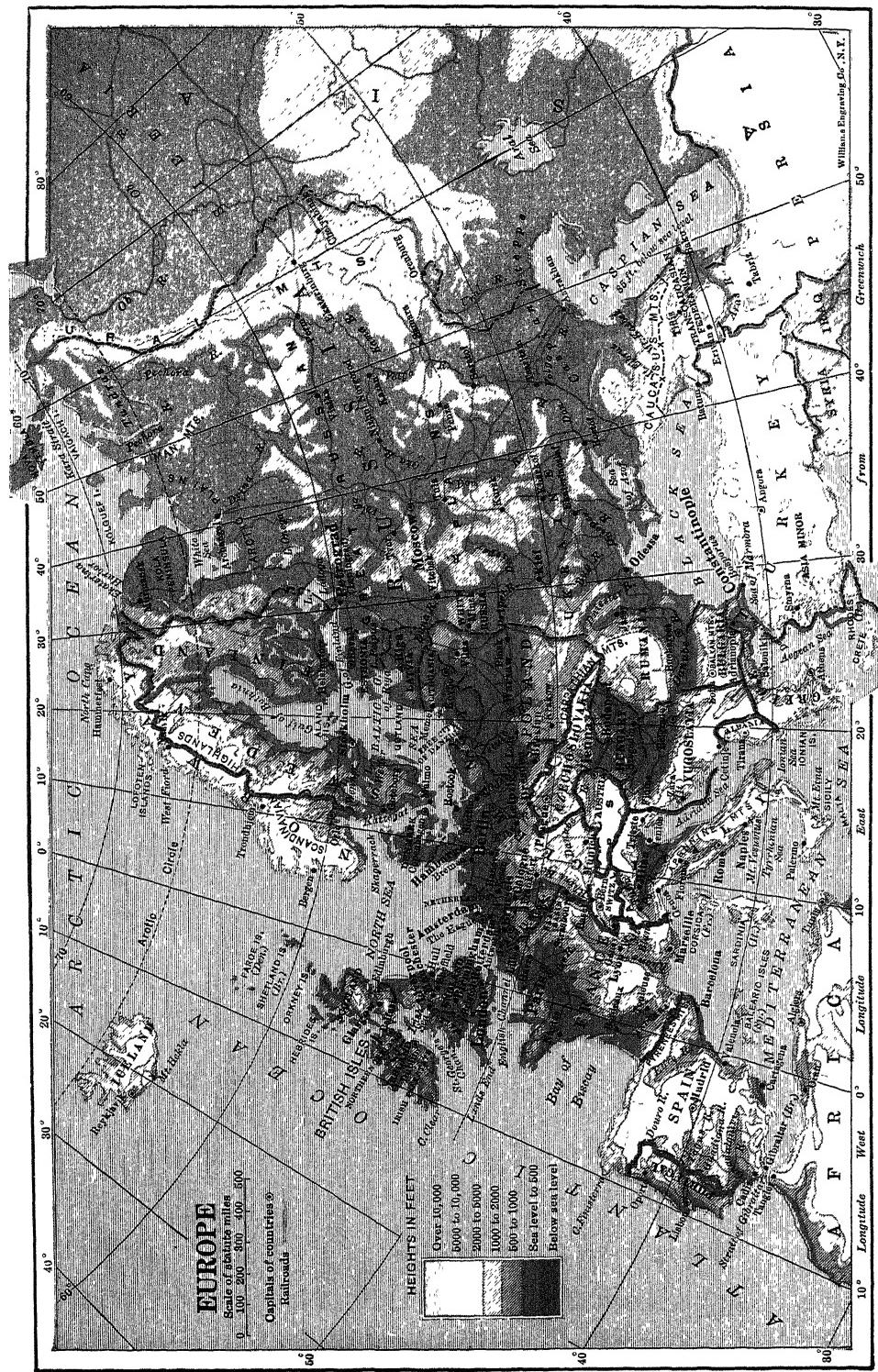


Fig. 159

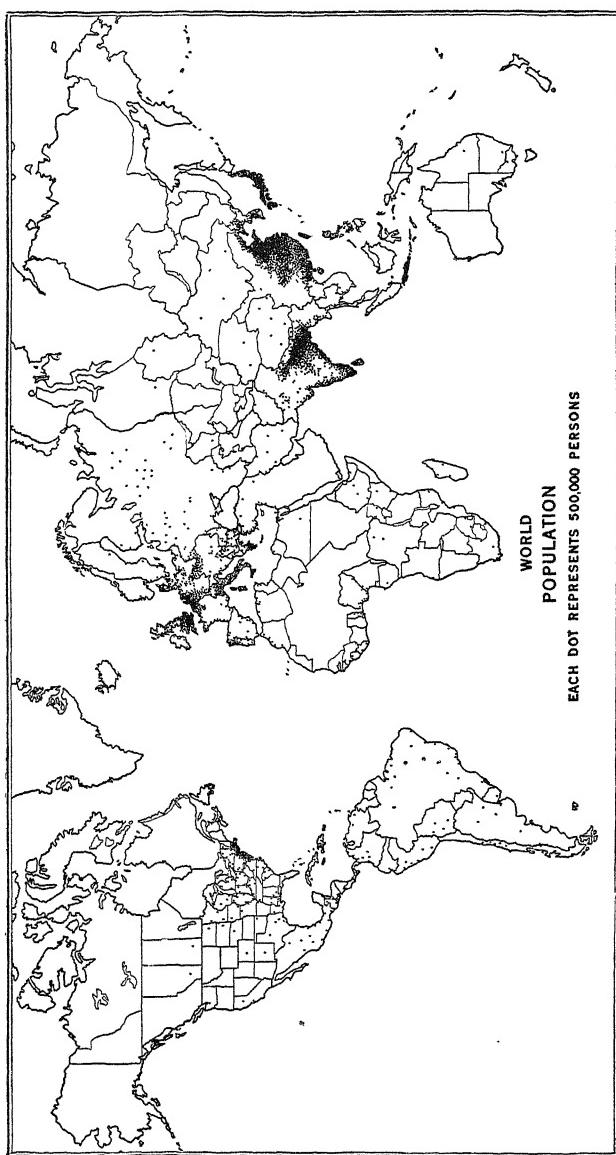
CHAPTER XVIII

REASONS FOR EUROPE'S WORLD-WIDE INFLUENCE

A continent with many enlightened people. Europe is less than half the size of North America, yet its population is more than three times that of the larger continent. There are, on an average, 117 people to the square mile in Europe, while in our own continent there are but 15. No other continent is so densely populated (Fig. 160) or has its population so evenly distributed as Europe. Asia's population is much greater, but its density is much less. In addition to the great numbers now living on the continent, we should think of the multitudes that have migrated to the Americas, Africa, Australia, Asia, and other parts of the world. Through these immigrants European civilization has been spread throughout the world. It is estimated that about seventy per cent of the people of the world are either under the control of Europeans or live in nations that are of European origin. No other continent has had so great an influence in the world as this (Fig. 161).

The continent is occupied almost entirely by the white race, which made its home there many centuries before it did in America. Europe had made great progress in civilization long before America was discovered. It has taken the lead in science, industry, commerce, art, literature, and music. This is probably due in some measure to the early settlement of the continent, but in larger measure to the influence of the continent itself upon the life of its people. It will be interesting for us to find out, if possible, how the continent is fitted to exert such an influence.

Great natural divisions of the continent. As in our own country, there are two great highlands with a great central plain between (Fig. 28). In Europe, however, the greater highland is in the



From The Geography of the World's Agriculture.

Fig. 160.

south (Fig. 159) instead of in the west, as it is in America, and the smaller one is in the northwest instead of in the east, as in our continent.

A continent of many nations. Many parts of Europe are naturally protected by surrounding mountains or the sea, as, for example, Italy, Spain, Greece, the Scandinavian Peninsula, Great Britain, Switzerland, and Czechoslovakia. People who settled such natural regions found protection from their enemies and were able to develop a special civilization of their own. This has given rise to many groups of people with their own ideals, customs, institutions, languages, and governments. Europe has thus become a continent of many nationalities. Do you think that this has been an advantage or a disadvantage in the progress of the people? How has it influenced the peace of Europe?

The influence of climate. The continent lies in the belt of prevailing westerly winds (Fig. 16), and the western coast is washed by a comparatively warm ocean current, the Gulf Stream. There are no high mountains along the coast from Spain to the Scandinavian Peninsula, such as we find in America. The warm, moist winds from the ocean can, therefore, sweep far inland over the great central plain at all times of the year. For this reason Europe, as a whole, is a warmer continent than North America (Figs. 163 and 164) and has a more evenly distributed rainfall. There are fewer places than in our own continent where it is very cold or very dry. Conditions suitable for agriculture extend much farther northward in Europe than in our own continent, except on our Pacific coast. More people live far to the north in Europe than in America. This is shown from the fact that Moscow in central Russia, in about the same latitude as central Labrador, has a climate so warm and moist that profitable agriculture can be carried on in that vicinity and even much farther to the north. Only a small part of this great central plain is too cold or too dry for man's habitation. Western Europe has a more even temperature than the eastern part, being warmer in winter and cooler in summer. Eastern Europe has less rainfall than western Europe (Fig. 165). Can you explain these facts?

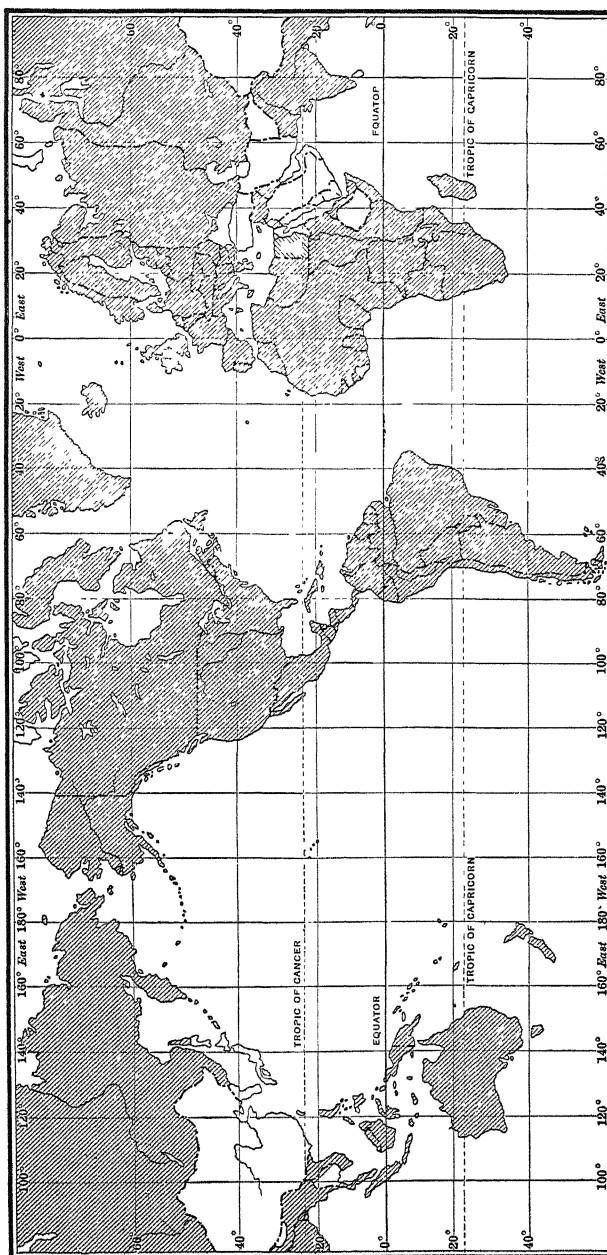


Fig. 161.—This map shows the spread of European influence. Shaded areas represent regions settled by people from Europe or regions that are now under the domination of European nations.

Northern Europe has frequent storms and cold waves similar to those of our own country. Such frequent and extreme changes of weather have an invigorating effect upon people, making them feel strong and ready for much hard work. In such a climate people must prepare for long, cold winters and short, hot summers. This means that they must plan their work ahead, study the best methods of doing things, economize their time, and work rapidly to bring things to pass, each in its proper season. These habits of life have doubtless done much to make the European peoples what they are to-day.

Southern Europe has a climate quite different from that of the north. It is a region of relatively dry summers and moist winters, particularly in the southern parts of Greece, Italy, and Spain.

Such climate affects agriculture unfavorably, for crops need moisture in summer. Irrigation is, therefore, necessary in many sections. The dry summers are due to the fact that southern Europe is mainly in the belt of the northeast trade winds in midsummer. These winds are comparatively dry because they blow from a cold region to a warm one, and because they blow

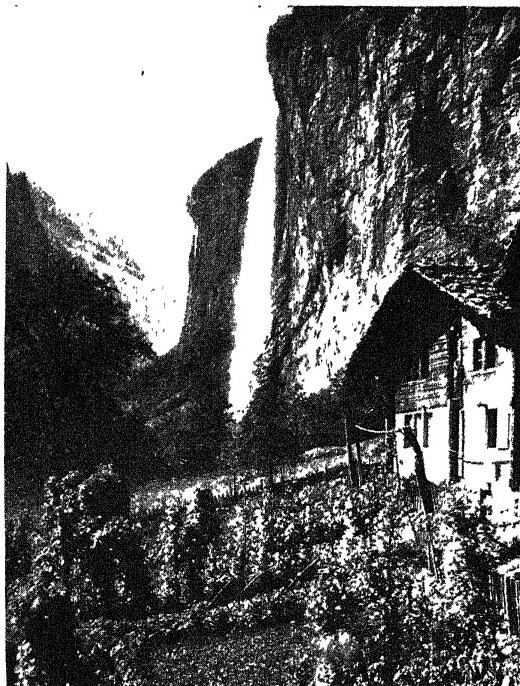


Photo from Publisher's Photo Service.

Fig. 162.—The rugged Alps with their beauty and grandeur have become the "playground of the world." Many hardy people have made their homes far up among these mountains. Switzerland has a population more than twice as dense as that of New England.

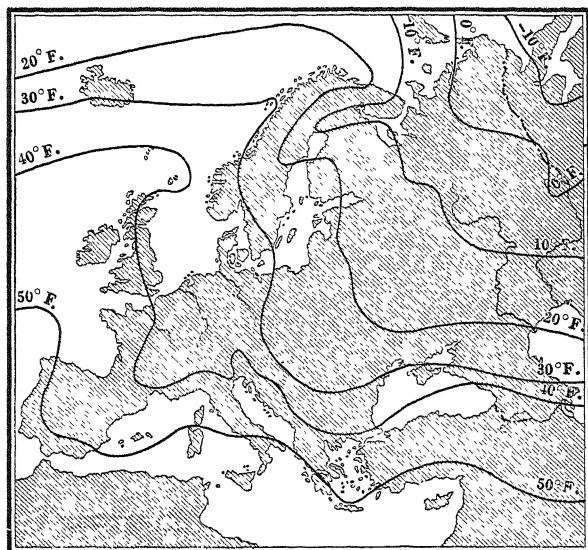


Fig. 163.—All places on a given isothermal line, as shown on this chart, have the same average temperature for January. Why do the lines bend southward in winter?

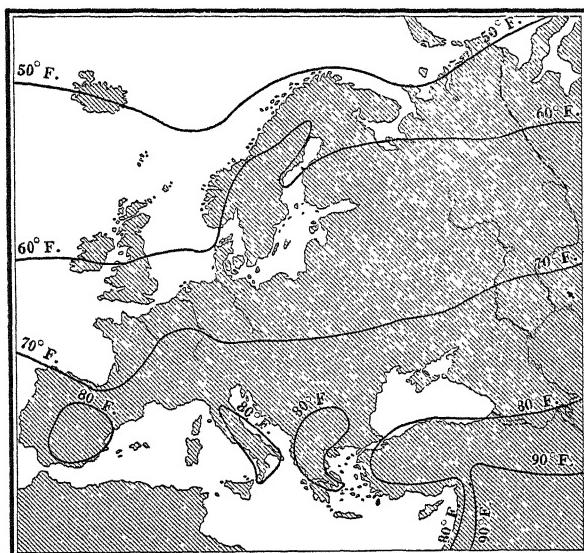


Fig. 164.—All places on a given isothermal line, as shown on this chart, have the same average temperature for July. Why is it warmer over Spain, Italy, and the Balkan countries than over the Mediterranean Sea in the same latitudes?

for a long distance overland. In winter the area comes under the influence of the prevailing westerly winds, which furnish a heavier rainfall. The winters are relatively warm because of the tempering influence of the warm Mediterranean Sea, and because the great mountains at the north shut off to some extent the cold winds which sometimes blow from that direction. The coast of northwestern Italy and southeastern France, known as the Riviera, is so warm in winter that it is visited by thousands from America and the colder parts of Europe. Oranges and other tropical fruits grow here, as they do farther south in Spain, in southern Italy, and in Sicily. Compare the temperature of these regions with that of corresponding latitudes in our own country.

Europe is a large producer of food. The following table shows what per cent of the world's production of the leading food materials was supplied by Europe and the United States during the years 1924-25 :

PRODUCTION OF WORLD'S FOOD MATERIALS, 1924-25

MATERIAL	EUROPE (Percentage)	UNITED STATES
		(Percentage)
Wheat	46	17
Oats	49	32
Rye	96	2
Barley	89	13
Corn	14	61
Potatoes	83	8
Sugar	29	5
Sheep	30	8
Swine	50	43
Cattle	20	14

A study of this table will show you that Europe, which is but little larger than the United States, is far ahead of us in the production of all these foods except corn. This condition is partly due to the fact that there are more than three times as many people in Europe as in the United States and that European agriculture is more intensive than American. In spite of this large production, Europe is obliged to import large quantities of food to meet her present needs.

The ability to produce large quantities of food is one reason why Europe has had such a large population. This has tended to give the continent wide influence in the world at large.

Where the food of Europe is produced. The three most important food areas of the continent are the Great Central

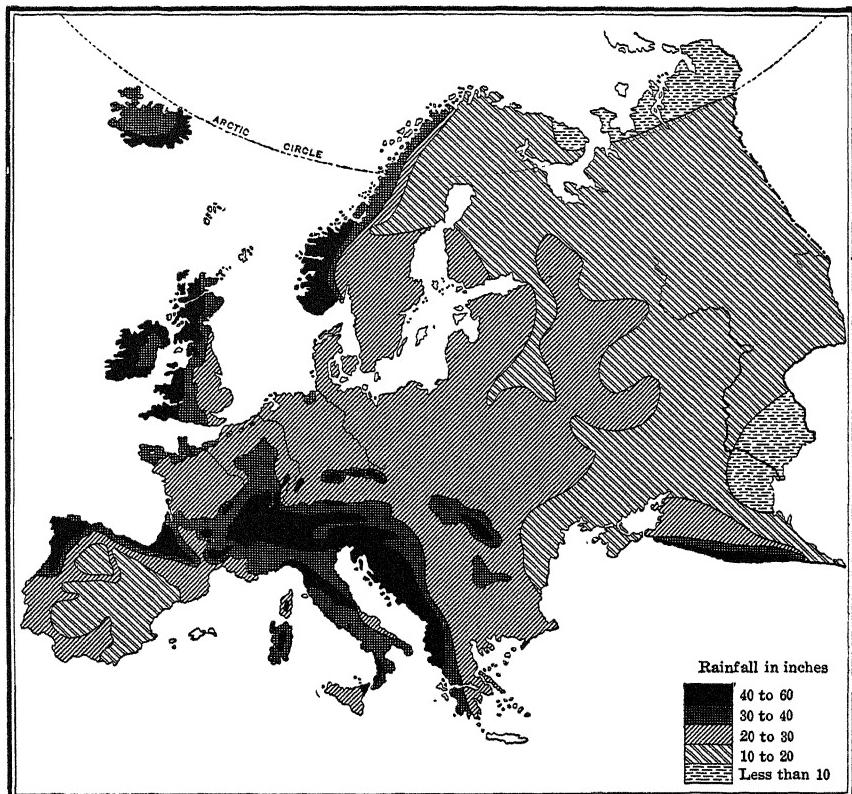


Fig. 165. — Average annual rainfall of Europe. Account for the regions of heaviest and of lightest rainfall.

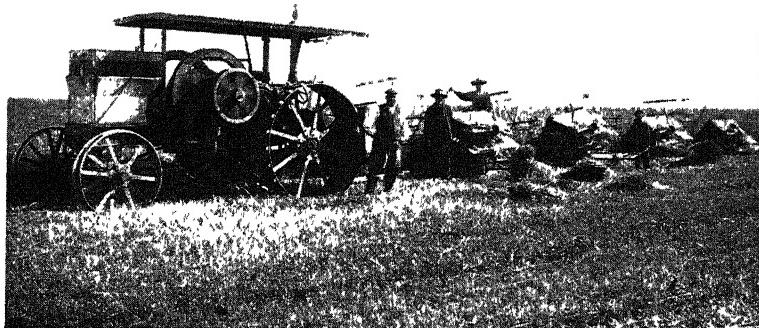
Plain, the valley of the Danube, and the valley of the Po. Of these the Great Central Plain is by far the most important, though the Po and Danube valleys produce vast quantities of wheat and other grains.

Study your physical map of Europe (Fig. 159) to see what a large part of the continent is included in the Great Central Plain.

What countries lie within it? The plain makes up about two-thirds of the entire continent. Its natural divisions are indicated under the study of Russia (Chap. XXIX).

Wheat is extensively grown in the southern part (Fig. 166). Large quantities of rye, barley, oats, flax, hemp, potatoes, and sugar beets, together with many other farm products of the temperate zone, are raised over widely scattered areas northward.

Throughout the Central Plain area animal husbandry is important. Great numbers of sheep, cattle, horses, and swine are



Courtesy International Harvester Co.

Fig. 166. — American farm machinery on a Russian wheat field.

raised. Dairying is carried on in many places. Can you name some of these?

The larger part of the plain was once covered by the great ice sheet that came from the north (Fig. 167). This ground up rock materials and did much to make the soil what it is to-day.

Upon this plain great numbers of people have made their homes, established their farms, built their cities, and developed their industries. How has the plain favored this? Large quantities of food and raw materials have been supplied by the plain to other parts of Europe, thus aiding in the support of the large

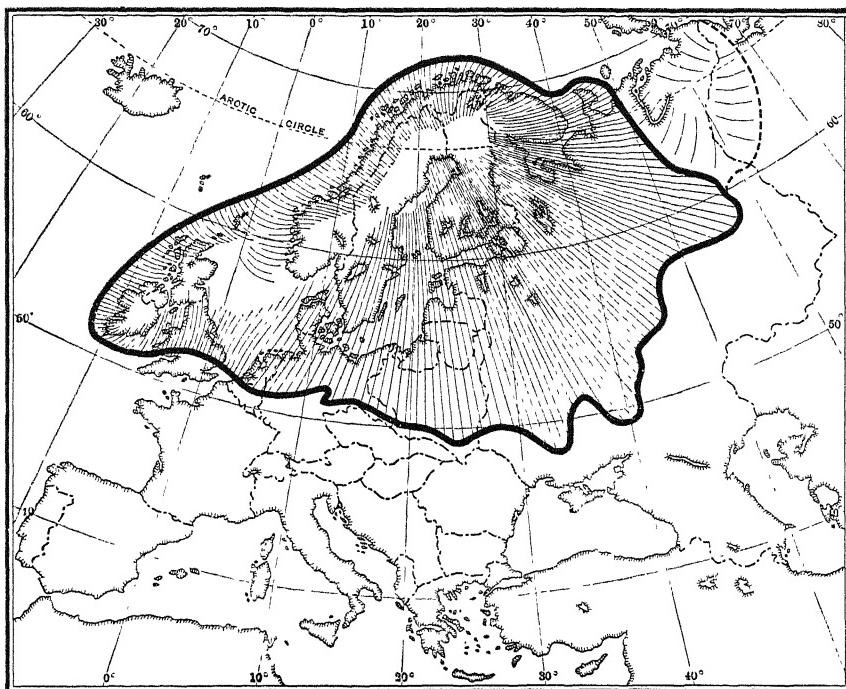


Fig. 167. — The parts of Europe that were covered by the ice sheet during the glacial period.

populations and in the development of industry and commerce in many sections.

Excellent fishing grounds. Shallow waters border all of northwestern Europe and furnish the finest fishing grounds in the world (Fig. 168). For many centuries these waters have furnished an abundance of wholesome food for the people of Europe. Even at the present day they are one of the continent's richest sources of food. The British alone have more than 100,000 people engaged in taking fish from these waters.

Many good harbors. Refer to your map of Europe, and observe that the continent is really a great peninsula reaching far to the southwest, with many small peninsulas extending from it in various directions. Many islands lie off the coast, and there are many gulfs, bays, and seas often reaching far inland. This

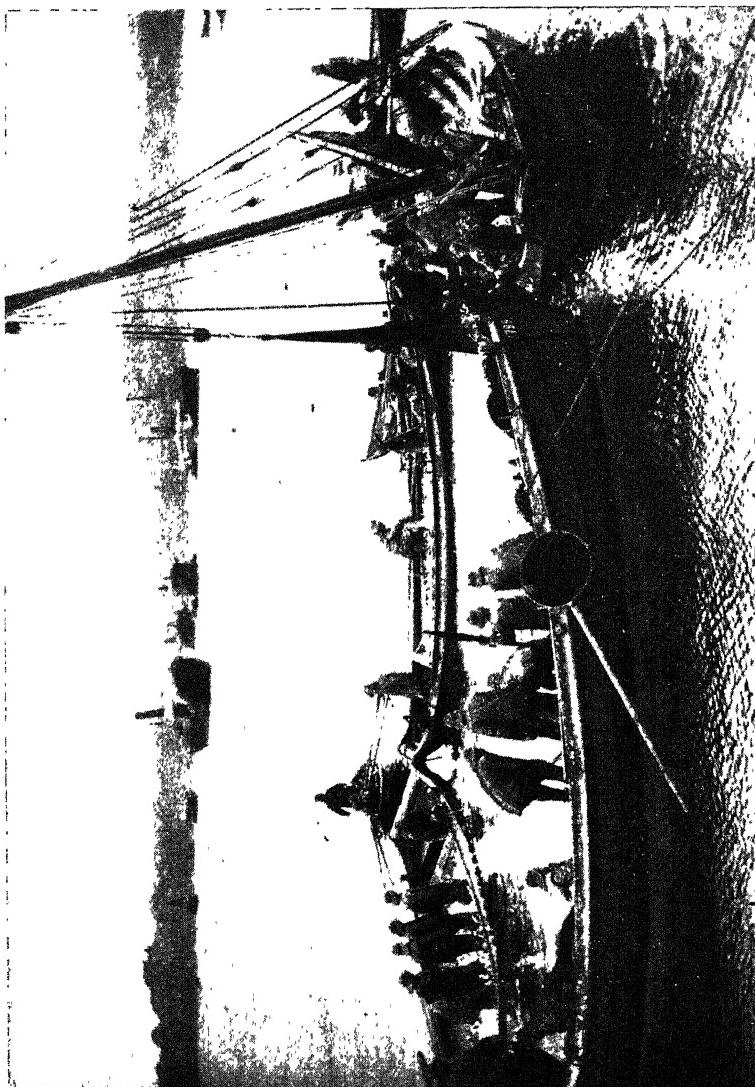


Fig. 168.—The waters of western Europe abound in fish of many kinds, furnishing a cheap food for the people of the continent. These men are making a big haul of herring off the coast of Norway.
Courtesy National City Bank, N. Y.

tends to bring all parts of the continent near together and into easy communication with one another. No other continent has such an irregular coast line with so many fine harbors (Fig. 169). How have these influenced the life of the people?

Many navigable rivers. No other continent has so many

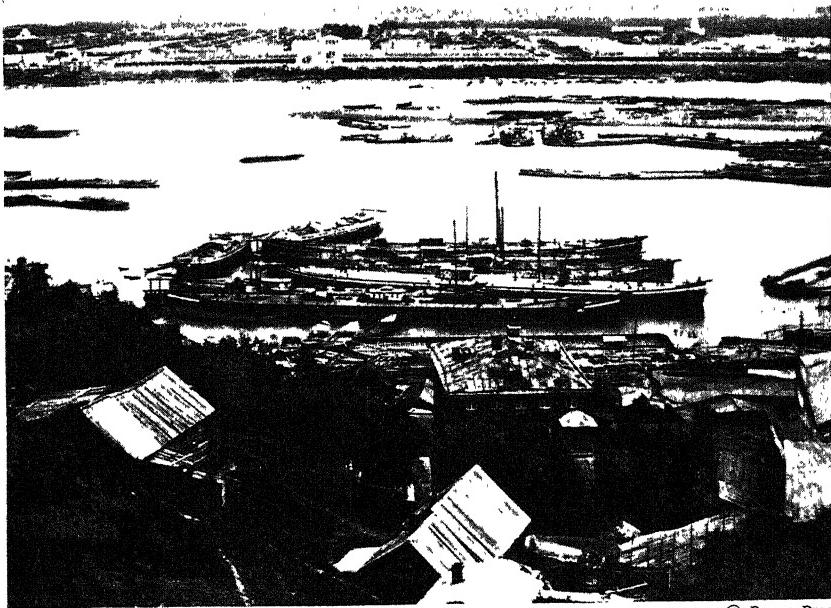


Courtesy National City Bank, New York.

Fig. 169.—Crowded shipping in the port of Oslo (formerly Christiania). Europe has many such ports, harboring ships from all parts of the world. These ports give employment to great numbers of people and, therefore, lead to the growth of great cities.

navigable rivers for its size as Europe. Their navigability is largely due to the fact that most of them flow over a comparatively level country. These rivers have their headwaters a very long distance inland. The rivers furnish excellent natural means of communication (Fig. 170). They are often connected by canals, thus making it possible for goods to be carried by water over large areas. As population has increased and commerce has grown, large sums of money have been spent in the improvement of rivers for navigation.

Valuable forests. Europe from the earliest days has been a well-forested continent. Gradually the forests have been cleared away and the land used for agriculture. On the mountains and hills, or where the land is not suited to agriculture, forests are



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Fig. 170.—A scene on the Volga. This is a very important river in the commercial life of Russia. It would probably be more important if it flowed into the Black Sea instead of into the Caspian Sea. Why? What kinds of freight are probably carried north and what ones south?

still allowed to grow. In the north there is the great forest belt which is Europe's most valuable forest area and which supplies it with a large part of its lumber. So much timber has been used, however, that much care is given to that which remains. Scientific forestry is taught and practiced by most of the European

nations. The countries of western Europe are now obliged to import large amounts of lumber.

Large deposits of coal and iron. During the past hundred fifty years Europe has made wonderful progress in commerce and industry. This has been made possible by the rich supply of coal and iron in western Europe (Fig. 171). With the invention of the steam engine and power machinery, coal became a necessity in the production of steam. Iron is needed in the build-

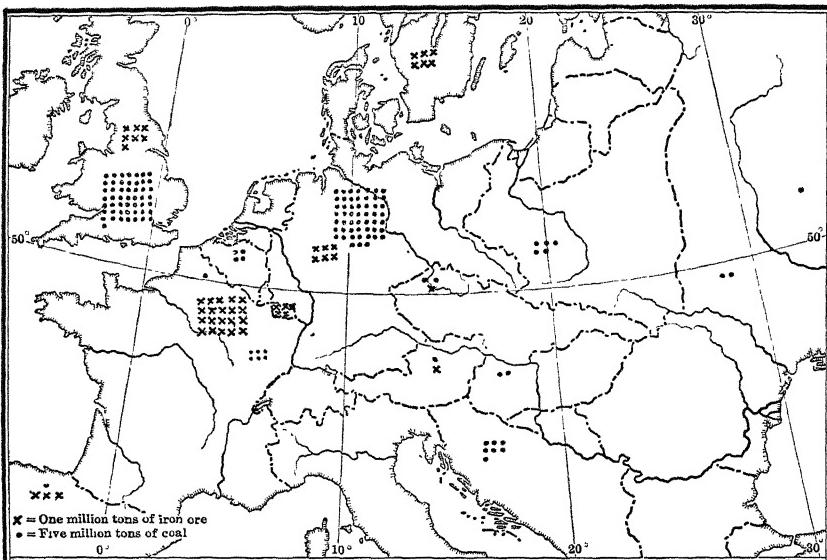


Fig. 171. — Coal and iron ore production in the principal countries of Europe in 1922. Since the World War these amounts have varied considerably from year to year. Great Britain usually produces more coal than Germany.

ing of new machinery, locomotives, railroads, and steamships. It is also used as a raw material in many types of manufacture.

The Mediterranean countries are poorly supplied with these minerals. This is probably the principal reason for the comparatively slight amount of manufacturing in that part of the continent.

QUESTIONS AND PROBLEMS

1. The rivers of Europe have played a more important part in the development of that continent than our own rivers have in the development of America. Why?
2. How does it happen that so many different languages are spoken in Europe?
3. Why do more people live in the northern part of Europe than in northern North America?
4. Which has the larger number of people per square mile, Europe or America? How do you account for this? Compare with the density of population in your own state.
5. What are the most densely settled sections of Europe? Account for this.
6. Why has Europe become the most important commercial continent?
7. Which continent, Europe or North America, has the more evenly distributed population? How do you account for this?
8. State in connected form the important reasons why Europe has had such a large influence in the world.

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of Europe locate the great occupations, such as agriculture, fishing, manufacturing, herding, lumbering, and mining. What physical conditions determine this distribution?
2. Locate the twenty-five largest cities of Europe, and determine how many and which ones are located upon: (1) rivers; (2) ocean harbors; (3) plains; (4) mountains. Try to determine the influence of each of the above upon the location of cities.
3. Make a list of the five European countries that are sending the largest number of immigrants to the United States. Find out why so many have come from these countries.

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CHAPTER XIX

THE INDUSTRIAL LIFE OF GREAT BRITAIN AND IRELAND

AGRICULTURE

Political divisions of the British Isles. In this chapter, all of Ireland, England, Scotland, and Wales will be treated as a whole under the name of *the British Isles*.

In 1922, after many years of unrest, central and southern Ireland, consisting of twenty-six counties, and known as the Irish Free State, became one of the British Empire's self-governing dominions. Northern Ireland, with its six counties, remained as a part of the United Kingdom.

The British people depend upon other countries for much of their food. During the World War there was nothing that so alarmed the people of the British Isles as the sinking of their ships by German submarines. There was good reason for their fears, as they were losing many of the ships upon which they depended for most of their food. If all supplies from other nations were cut off, England would suffer from famine within a few weeks.

Great Britain must import a large part of her food and raw materials because her area is small and her population is large. The area of the whole group of islands is less than half that of the single state of Texas, while the population numbers about 47,000,000 people. Then, too, many of the people are engaged in manufacturing and commerce and must depend upon others for their food supply.

Great Britain formerly an agricultural country. Several centuries ago England raised enough grain and wool for her own use and also exported some to the more thickly settled countries of the continent. Great Britain then raised more sheep

than any other country of Europe. England was able to export grain and wool because her population was very much smaller and nearly all her people were engaged in agriculture. What manufacturing was done was carried on in the homes as it was in this country in colonial days. Great Britain then had none of the great factories of to-day. The people were not grouped so much in towns and cities but were widely scattered on the farms. Now the most densely settled part of England is in the north and west among the coal mines and factories and in the vicinity of London. Then most of the people lived on the level land of the south and east, where conditions for agriculture were most favorable.

How the physical features of the British Isles affect farming. In the British Isles, as in all other countries, agriculture depends very largely upon physical features. The islands are in part an extension of the highlands of the Scandinavian Peninsula (Fig. 159). Much of Scotland, all of Wales, and parts of western England consist of mountainous or very hilly country. In Scotland agriculture can be carried on easily only in the small valleys or on the lowlands of central Scotland. In other parts of the country, however, the grass-covered hills and mountains offer excellent pasture for sheep.

Ireland consists of a saucer-shaped central lowland with higher land bordering the coast. Its mild, moist climate causes an abundant growth of grass, so that the raising of live stock has become one of the chief occupations (Fig. 176).

The chief highlands of England are the Pennine Range. Nearly all the rest of the country is a plain, a part of the lowland of central Europe. On the whole, the mountains of northern Scotland and the highlands of Wales are the greatest obstacles that the surface of the British Isles offers to agriculture. The soil for the most part is good and responds bountifully to intensive cultivation. In England thirty or more bushels of wheat are raised on an acre of land. This is more than twice as much per acre as is raised on much of the wheat land of our Middle West.

Climate. Although England is in the same latitude as Labrador, the prevailing westerly winds so temper the climate that there

is scarcely a day in the year when men cannot work in the open fields. In the winter, although the days are short, the twilight is so long that the shortness of the day does not seriously interfere with farm labor. The rainfall is reliable and abundant. The same prevailing westerlies which temper the climate bring an ample supply of moisture to all parts of the islands. It is



Courtesy of the International Harvester Co.

Fig. 172. — Harvesting a field of oats in Scotland with American machinery. The cool, moist climate of this country is better suited to the raising of rye and oats than it is to wheat.

more abundant on the western coast than in the eastern part of the country, yet no part suffers from drought.

Farm products of the British Isles. Agriculture or grazing is carried on in nearly all sections of the British Isles. About one-fourth of the land is under cultivation. Although only a small part of Scotland can be cultivated because the country is so

mountainous, sheep thrive on the grass, which grows well in the cool, moist climate. Oats are a valuable farm crop and are an important article of food (Fig. 172). The central lowlands of



© Burton Holmes; photo from Ewing Galloway.

Fig. 173.—A shepherd and his flock at Ambleside in the English lake district. Notice the rugged, rocky character of the country. Mutton and wool have long been important products in this part of England. How is the region suited to sheep raising?

Scotland offer the best opportunity for farming. There the land is level, and the soil much richer than either in the north or in the south. In the eastern part of the lowland, where the rainfall is less, most of the wheat of Scotland is raised.

In England, the heavier rainfall of the west produces a luxuriant growth of grass. Cattle are raised chiefly in this part of the country. The drier regions of the east are well adapted to sheep raising. Sheep are also raised in large numbers on the hills of the Pennine Range, in the lake district (Fig. 173), and in parts of the east and south where the soil is too poor for cultivation.



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 174. — Sheep market at Birmingham, England. Great Britain is an important sheep-raising country, in spite of the fact that so many people are engaged in commerce and manufacturing. How is sheep raising related to other occupations of the country?

In spite of their small size the British Isles have nearly four times as many sheep as Germany and nearly as many cattle as France. They produce about sixty per cent of the beef consumed in the country.

Wheat is raised in the eastern part of England north of the Thames River (Fig. 175). Here the glacial soil is well adapted to

wheat, and the rainfall is less than on the western side of the mountains. Owing to the cool summers of the British Isles some crops, such as corn, tobacco, and grapes, which require a warmer climate or a longer growing season cannot be raised. As in all densely settled regions, truck farming is carried on extensively. Fresh vegetables must be provided for the many manufacturing cities and towns.



Courtesy International Harvester Co.

Fig. 175.—A harvest scene in England, showing American machinery in use.
Note the cultivated fields upon the hillsides.

Dairying. The dairy industry is carried on where grasslands offer feed for cattle. The industrial and commercial cities require large quantities of milk and other dairy products. The warm, moist climate of southwestern England makes this the best part of the country for cattle raising. On parts of the lowlands of central and eastern England dairying is also extensively carried on. One of the railways that runs from central England to London carries so much milk to the city that it is often referred to as the "milky way." Although England produces butter and cheese of the finest quality, she supplies only a very small part of the quantity used in the country.

Three excellent breeds of dairy cattle have been developed on small islands south of England. The breeds have taken their names from the islands, Alderney, Jersey, and Guernsey. Cattle of these breeds are now found in all countries in which dairying is an important industry.

Ireland raises more live stock in proportion to the number of people than any other country of Europe (Fig. 176). Besides



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Fig. 176.—Cattle grazing upon the hill pastures of Ireland. More cattle are shipped to England from Ireland than from any other country. In the central and southern sections grazing is one of the principal occupations. Why does grass grow abundantly in Ireland?

supplying her own people with meat and dairy products, Ireland sends to Great Britain live animals, meats, eggs, poultry, and large quantities of butter. In southern and western Ireland the people have established coöperative creameries where the cream from surrounding farms is made into butter and sent to market in large quantities. Condensed milk is also manufactured.

MANUFACTURING

Commercial competition. In a town or city merchants by means of advertising, window displays, and bargain sales try

to induce buyers to come to their stores instead of going to others selling the same kind of goods. This rivalry among dealers we call competition. Did you ever think that nations as well as individuals are competing with one another? Great Britain is a nation with which all other manufacturing countries must compete in the markets of the world. If the cotton mills of New England or our southern states expect to sell their goods in Africa or South America, they must sell the same kind of goods as cheaply as those made in England or the merchants of those countries will buy English goods.

A person opening a new store finds it more difficult to secure customers than the man who has been in business for years. So it is with nations. Great Britain had the advantage of possessing a large trade with other countries for years before the other nations of Europe had built factories and become her competitors. England's first place as a commercial nation is due in large part to her great industries. Because of her many advantages she is surpassed only by the United States in the value of her manufactures.

The textile industry in Great Britain. *Cotton goods.* The industry which gives Great Britain the most valuable product for export is the textile industry. The cotton goods made in Manchester and the towns surrounding it are sent to all parts of the world. You will be interested to know how the great cotton mills happened to be located in this part of England. Formerly many sheep were raised in this district, and much of the wool was exported to Flanders (now included in Holland, Belgium, and northern France), which was noted for its fine weaving. Later some of the skilled Flemish weavers who had manufactured the wool exported from England were persecuted in their own country, emigrated to Manchester, and made it a famous textile center. At first they used wool as they had in their former homes, because cotton had not then come into general use.

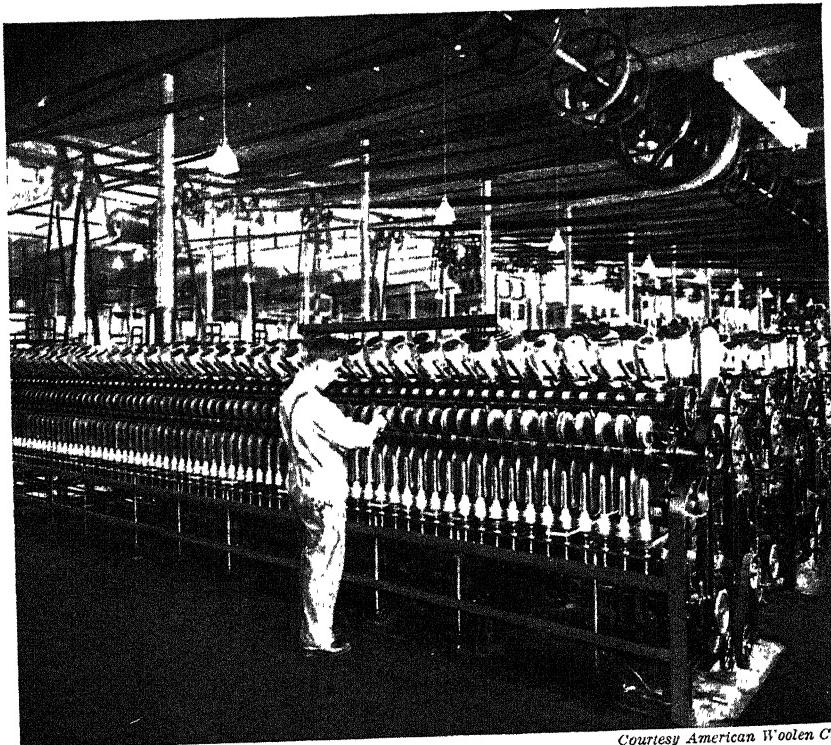
In those days manufacturing, even by the skilled weavers who had come from Flanders, was carried on in the homes. The spinning wheel and the hand loom were the only machines known

to the textile workers. But about the time of the American Revolution several machines were invented which revolutionized the textile industry. James Hargreaves invented the spinning jenny, which could spin eight threads at once. (Hargreaves named the machine for his wife, whose name was Jenny.) His invention was improved by Arkwright, Crompton, and others, so that a larger number of threads could be spun at one time. At the present time a single machine spins more than a thousand threads at once.

One of the most important of the early inventions was that of the water frame, by means of which water power was used to run the spinning machines. Heretofore the machines had to be operated by hand. Later the invention of the steam engine made possible the use of steam as well as of water power. Soon power looms came into use, and with these the workers were able to weave much more rapidly than they could with the old hand looms. It was about this time, too, that the cotton gin was invented in America. This greatly increased the supply of raw cotton for the new spinning and weaving machines. Can you tell why?

As the machines became larger and more expensive, the work could no longer be done in the homes. Spinning wheels and hand looms gradually passed out of use, and the workers took their places beside the new machines in the factories, which rapidly increased in number (Fig. 177). People made their homes near the factories, and towns and cities grew rapidly in population. This method of work seems very commonplace to us, but in those days it was entirely new and caused a complete change in the lives of the people of England and later in the lives of all civilized peoples. Indeed this change from manufacturing all goods in the home to the factory system was so great that it is known as the Industrial Revolution. England was for many years the workshop of the world. In after years similar changes took place in France, the United States, Germany, and other countries. In recent years industries in Japan have been passing through just such a transformation as England passed through more than a hundred years ago.

With the use of textile machinery, Manchester and near-by towns offered unusual advantages for the growth of cotton manufacturing. At first the streams furnished water power, and in later years the great coal deposits of the region gave an unlimited supply of power. The winds from the sea supplied to the atmos-

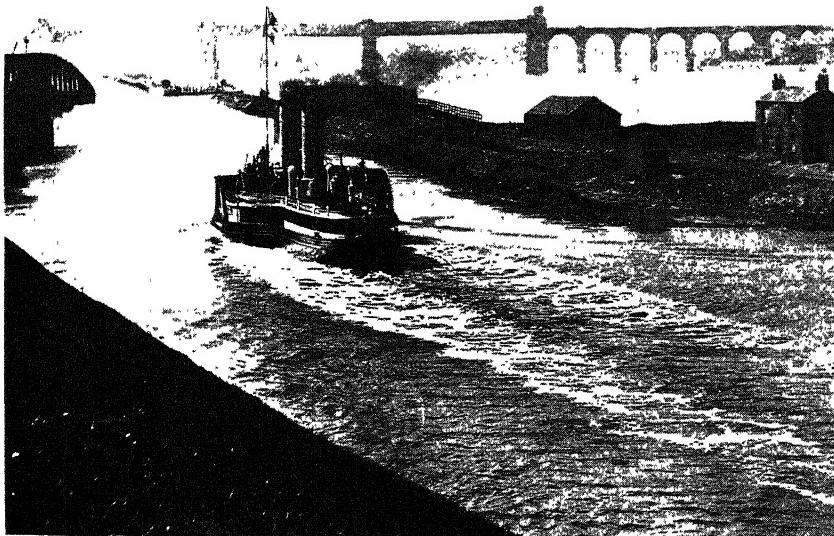


Courtesy American Woolen Co.

Fig. 177. — An English spinning frame. Yarns are made to be woven into English cloths, which are sent to all parts of the world.

phere the moisture necessary for spinning fine threads. Liverpool, an excellent port close at hand, received the raw cotton from the West Indies and later from the United States, from Egypt, and from India. Here, too, were the workers who for generations had been skilled in spinning and weaving. With all these advantages it is not surprising that the small region about Manchester has become the most important cotton-manufacturing region of the

world. A ship canal from Liverpool to Manchester now allows ships to carry cotton and other products direct to Manchester, which has become a distributing center for the whole manufacturing region (Fig. 178).



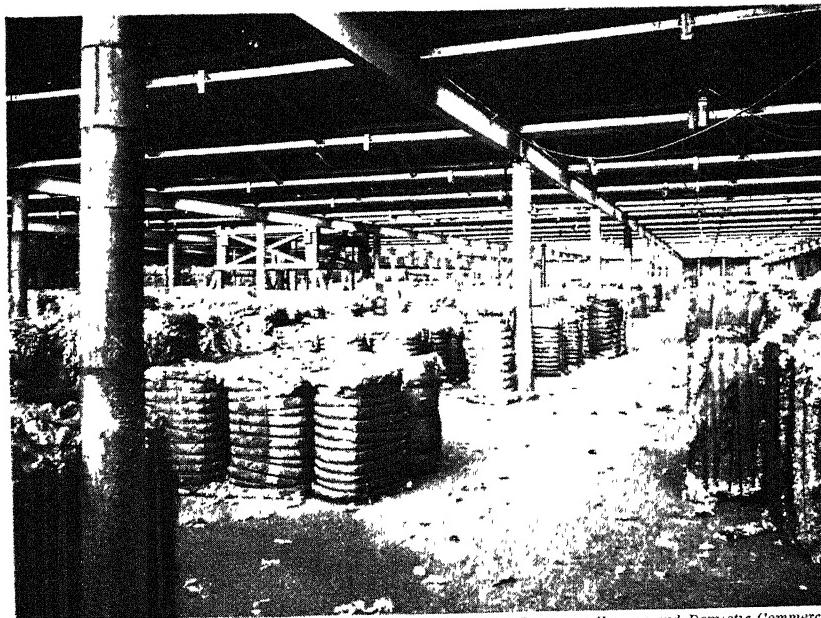
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Fig. 178.—A scene on the Manchester ship canal. The canal is deep enough for ocean steamers to bring their cargoes direct from the ports of the world to Manchester, which is inland nearly 36 miles. What cargoes would ships be likely to take to and from Manchester?

It is interesting to see how one industry causes others to spring up. In Manchester there are large plants for bleaching and dyeing the cotton goods, others for printing calicoes, and still others for manufacturing the many machines needed.

Woolen goods. As cotton manufacturing increased in Manchester and the surrounding towns, the woolen industry was gradually pushed eastward over the mountains into Yorkshire.

This was because wool does not require moist air for its manufacture. The making of fine woollen and worsted goods has become an important industry in Bradford, Leeds, and neighboring towns. Before machines were used all the wool used was produced in the British Isles. Indeed some of the finest wool in the world is still produced in Yorkshire. To-day not more than a quarter of the wool used is raised at home. The remainder comes chiefly from Australia, New Zealand, and



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 179.—Interior of a cotton warehouse, Liverpool, England. This cotton has been imported for use in English cotton mills. From what parts of the world has it probably come?

Argentina. Power for the mills is readily obtained from the coal field near at hand.

The quality of the woolen goods manufactured in the Yorkshire district is the finest in the world. Here are made broadcloths, serges, cheviots, tweeds, and worsteds, which are sold in our own country and all other parts of the world where the best goods are used. Rugs and carpets are also important products.

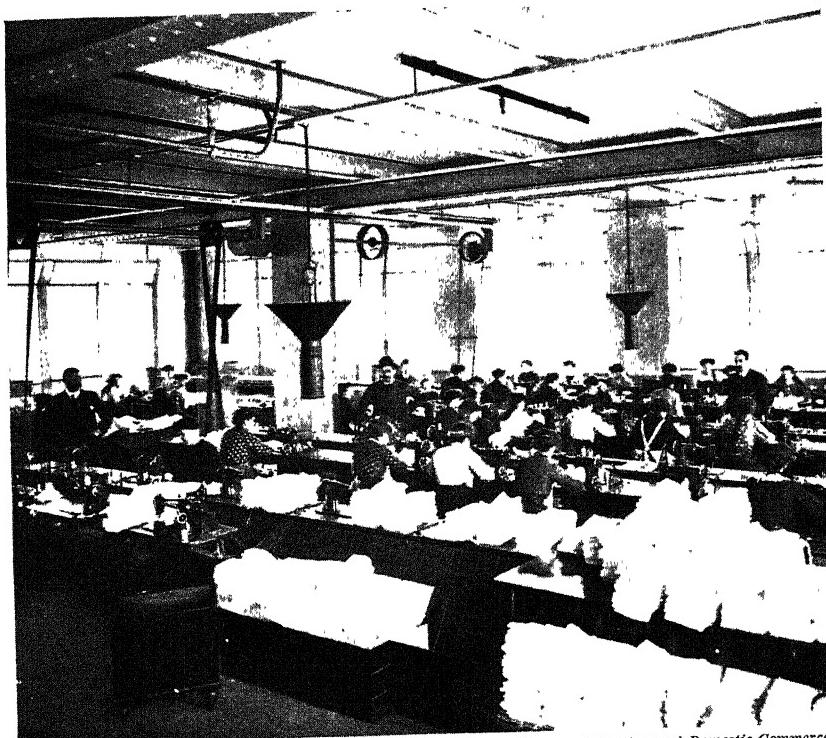
The woolen industry, like the cotton industry, has a close relation to the commerce of the country. Many tons of raw wool must be imported from distant countries, and the manufactured cloth sent out again. Wool may be imported from Argentina or Australia, and the cloth made from it may be exported to the same countries. This is necessary because the people in Australia and Argentina make a specialty of farming and grazing while the people of Great Britain make a specialty of manufacturing. The workers in the factories must also obtain much of their food from other countries. This also adds to the commerce of the country.

Linen manufacture. The linen industry is carried on chiefly in the north of Ireland in and around Belfast. Here fine linen cloth and beautiful laces are made in large quantities (Fig. 180). Linen is made from the flax that is raised in that part of Ireland. The part of the plant used is the inner fibers of the stem. The flax is not cut down as most grasses are, but is pulled up by the roots so that no part of the stem will be lost. The quality of the flax is better, too, when pulled than when the stalks are cut. The stems, from one to four feet long, are then placed in water and allowed to decay partially so that the fibers can be separated from the woody part of the stem. After the fibers are separated, they are spun and woven in much the same way as cotton and wool.

Northern Ireland offers many advantages for the making of linen. The moist climate is suitable for the growing of flax, although much of the raw material is obtained from Russia and Belgium. The climate also aids in bleaching the linen. As a part of the bleaching process, the linen is spread on the grass, which in this climate is green all the year. Thus in Ireland bleaching can be done throughout the year, while in most other countries the work cannot be carried on in winter. Cheap labor also gives Ireland an advantage in the manufacture of linen. Here the men are employed in shipyards and in other industries, while the makers of linen are largely women and girls. Although Ireland has no coal, this can be brought in readily from Scotland and England.

Burlap and *linoleum* are manufactured in Scotland. Dundee, in the central part of the lowlands of Scotland, is the center of the jute industry.

Kirkcaldy, south of Dundee on the Firth of Forth, is the chief center for the manufacture of linoleum. Linoleum is made



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 180.—No country excels Ireland in the manufacture of fine linen. These workers in a factory in Belfast are making linen articles largely for the American trade. Thousands of such workers are employed in these factories. Why does not the United States manufacture its own linen?

of strong jute or burlap, linseed oil, ground cork, and resins. Extensive commercial relations have grown out of the making of burlaps and linoleums. Scotland receives the jute from India, the linseed, or flaxseed, from the United States and Argentina, the cork from Spain, and the kauri gum, a resin, from New

Zealand. Coal is found in the lowlands of Scotland to supply the necessary power for this and other industries. These burlaps and linoleums are sent to many different countries. Since so

much of the raw material is imported and the manufactured product exported, the location of Dundee and Kirkcaldy on the coast is especially favorable.

Iron and steel.

Next to textiles in value among the manufactures are the articles made of iron and steel. From very early times much iron has been manufactured in Great Britain. For a long time charcoal was used for smelting the ore. Since charcoal is made from wood, the making of iron products was carried on only near the for-

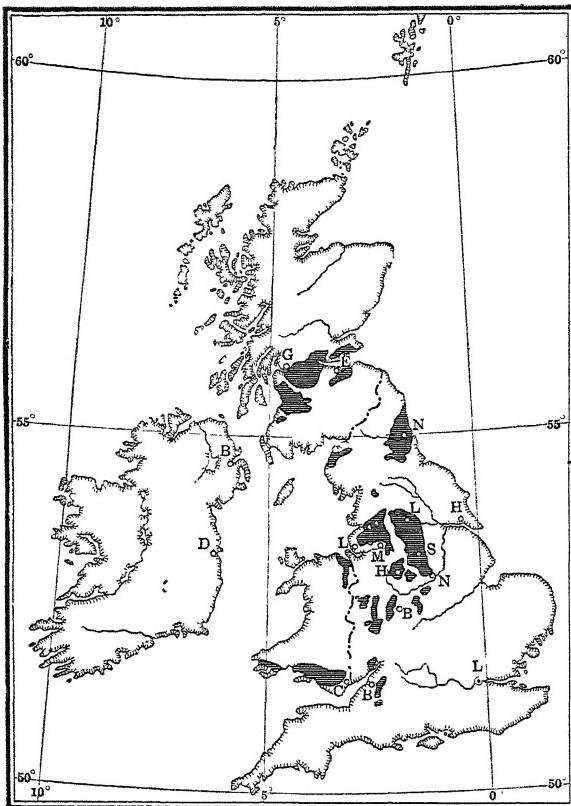
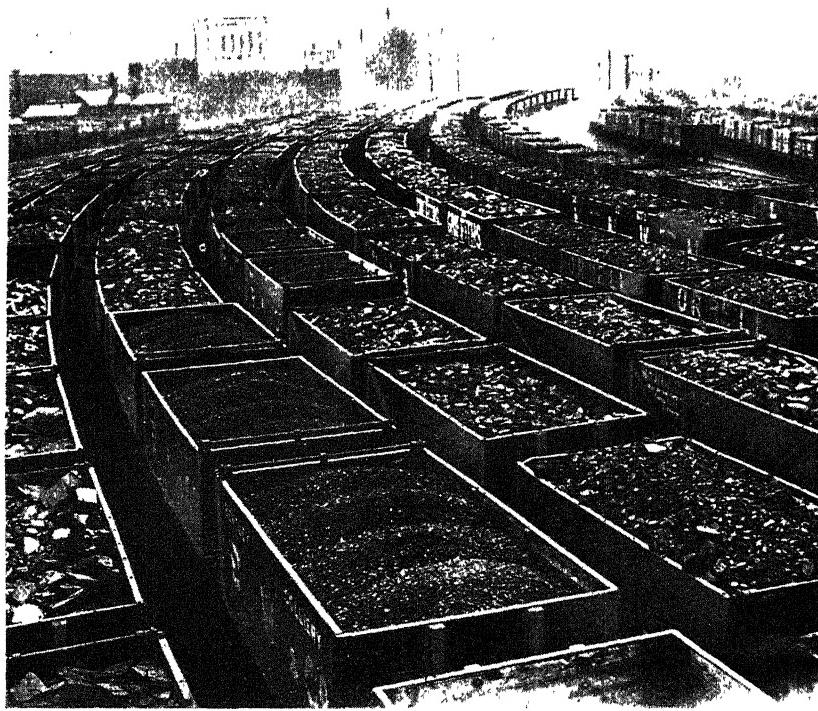


Fig. 181. — The shaded areas show the coal fields of Great Britain. Iron ore occurs in or near most of these areas. What industrial cities owe their importance to their mineral deposits? Northern England produces most of the English ore to-day. Great Britain now imports about sixty per cent of the ore used in the country.

ests until the forests were nearly all used up. Fortunately, about the time of the invention of textile machines by Hargreaves, Arkwright, and others, it was found that coal could be used instead of charcoal for smelting iron. With the use of

coal much more iron was produced and at a lower cost. This made possible the building of the many machines needed in the mills and factories that sprang up near the rich coal fields of England. The abundance of iron ore and coal made Great Britain a leader in the manufacture of iron products.



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Fig. 182. — These trainloads of coal are leaving the English mines. Where will the coal probably go? How has such an abundance of coal helped English industry and commerce?

Much coal mined near Newcastle. In the cities about Newcastle great steel-manufacturing plants have sprung up because coal is very abundant and iron ore is found near by (Fig. 181). So much coal is mined near Newcastle that many shiploads are sent to other parts of England and to other countries (Fig. 182). Have you ever heard the expression "Carrying coals to New-

castle"? What does it mean? This is one of the important shipbuilding regions of Great Britain. Why?

Sheffield noted for cutlery. Sheffield is noted for its cutlery and has given its name to a high grade of silver plate known as "Sheffield plate." Here are made the finest knives, razors, and

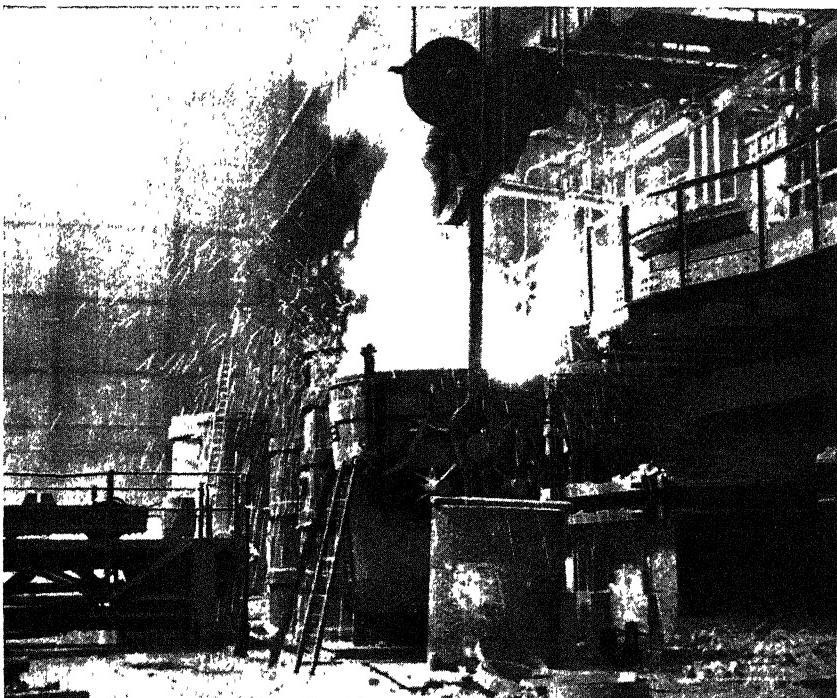


Photo from Ella Barnett.

Fig. 183.—A view of one of the great furnaces in an English foundry. The picture shows a large crucible being filled with molten iron that is to be used in casting. There are many such iron works as these giving employment to large numbers of English workmen.

saws, as well as the heavier steel products, such as plates for ships and railroad supplies. Examine the knives used in your home and look for the name Sheffield at the base of the blade. For the finest cutlery made in Sheffield the iron is imported from Spain and Sweden.

Birmingham noted for its steel plants. Just to the south of the Pennine Range is Birmingham, the center of another region

noted for the manufacture of iron and steel products (Fig. 183). Because there are so many smoking chimneys, piles of waste, and coal pits, the region about Birmingham is known as the "black country." Iron was first smelted here because of the presence of iron ore and because charcoal could be obtained from the forest of Arden, which is near at hand. But the supply of

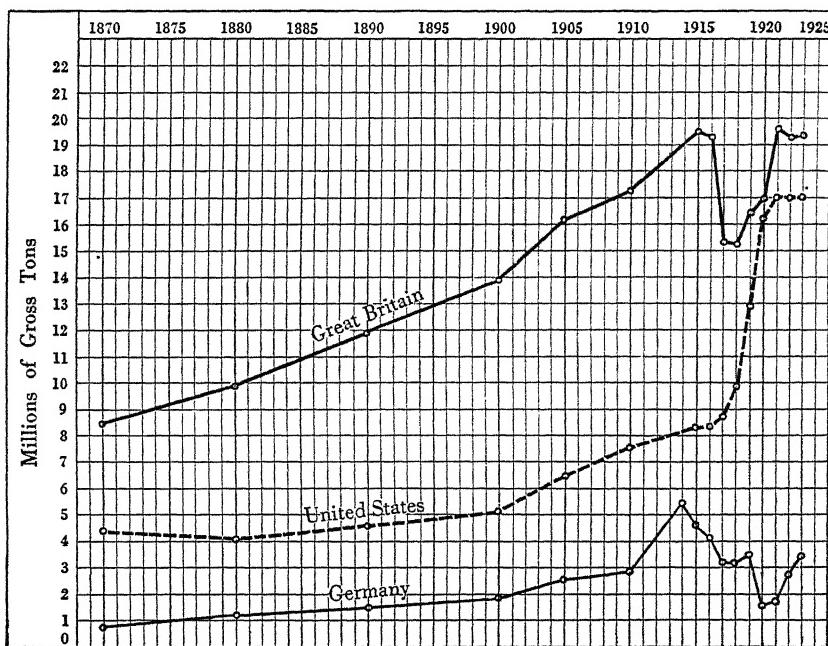


Fig. 184. — Growth in the total tonnage of merchant ships for Great Britain and United States, including the Great Lakes, and for Germany, from 1870 to 1925. Account for the sudden drop in tonnage for Great Britain and Germany after 1914.

iron ore is not sufficient to allow the making of the heavier iron and steel products. The manufactures of Birmingham are much the same as those of New England. Both places make relatively small articles which require a great deal of skilled labor but not large amounts of iron and steel. For this reason the manufactures of the Birmingham region include firearms, jewelery, clocks, watches, nails, chains, pins, and needles. These articles

are made in great quantities and are exported to practically every country in the world.

Shipbuilding an important industry. Great Britain builds more ships than any other nation and shipbuilding is one of her greatest industries. It has developed because of the nation's great need of ships. Large quantities of food and raw materials must be brought into the country and the many manufactured

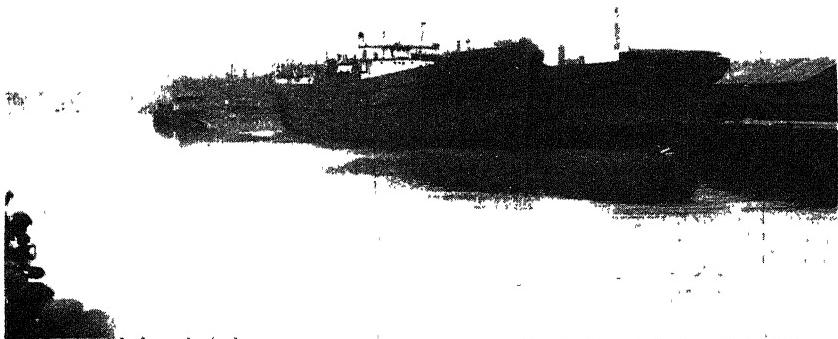


Photo by Elmendorf; from Ewing Galloway.

Fig. 185.—Shipbuilding on the Clyde in Scotland. The ships in the foreground have just been launched and are now being finished for ocean service. In the background are the stocks where other ships are being prepared for launching. There are many such shipyards upon the Clyde.

articles must be sent out in ships. The abundance of coal and iron, many skilled workmen, capital, and deep, protected waterways greatly favor the industry. When ships were made of wood London was the great shipbuilding center. When steel began to be used instead of wood the industry was moved to places having coal and iron near the sea. Over forty-five per cent of the nation's ships are built below Newcastle on the Tyne. At present the Clyde Valley, in southern Scotland, with Glasgow as

its center, is a very important shipbuilding region (Fig. 185). Over thirty per cent are built here. Belfast is another very important shipbuilding center. Ships from each of these regions can be found in nearly every important port of the world.

QUESTIONS AND PROBLEMS

1. Why are the British people dependent on their ships for food?
2. Why were most English people formerly engaged in agriculture?
3. Northwestern England is the most densely populated part of the British Isles to-day. Why is this?
4. Why do the people of England and France need to do more intensive farming than the farmers of our Middle West?
5. What conditions favor the raising of cattle in the western part of England?
6. Why is it that English and French farmers raise twice as much wheat per acre as our farmers do?
7. Why is corn not a crop of the British Isles?
8. Great Britain depends upon other countries for food and raw materials. Why does she do this?
9. What agricultural products are sent from Ireland to England? Why?
10. Why was the early iron industry of Great Britain carried on only near forests?
11. How was the manufacture of factory machinery increased by the use of coal?
12. Of what advantage is it to England to have coal and iron near together?
13. Why have many steel plants developed near Newcastle? Glasgow? What conditions favor shipbuilding near Belfast?
14. Why does Sheffield make the finest cutlery in the world?
15. Why does Birmingham manufacture small steel articles of skilled workmanship?
16. Compare the iron manufactures of Birmingham with those of New England.
17. How do the industries of Great Britain depend upon her coal and iron?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the British Isles make a map showing the density of population. Show areas of sparse population in light color and areas of dense population in darker colors. Compare this map with a map showing iron and coal fields. Print the names of all densely populated industrial cities and account for their location.
2. On an outline map of the British Isles shade the iron areas; the coal areas. Locate with red dots the industrial cities. Account for their location and growth. Print the names. Compare with a population map.

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CHAPTER XX

GREAT BRITAIN AS A COMMERCIAL NATION

Why Great Britain has become the leading commercial nation of the world. Why should this nation with such a small area have built up a commerce vastly greater than that of many other nations of much larger size? There are many reasons for this. Though we cannot consider them all here, some of the simpler ones we may easily understand.

The people and the land. We may say in a general way that the great commerce of the nation is due both to the people and to the land in which they live. The British people have long been intelligent, ingenious, industrious, and progressive, with a natural fondness for exploration, trade, and industry. These qualities have probably been important in determining Great Britain's progress in commerce, colonization, and industry. Important as the spirit of the people has been in the making of the British nation, we must not overlook the fact that these people have had a most favorable land in which to live. Had it not been for this land, they could not have made the progress that they have. The country has been ideal for the development of such a people. As we go on with our study, we shall learn more of its natural advantages.

The general character of British commerce. In our study of British agriculture we have learned that the farmers of Great Britain do not begin to raise enough food for the supply of the nation. Large quantities of foodstuffs must therefore be imported from different parts of the world (Fig. 186). These foodstuffs constitute nearly half of the total British import trade.

The British industries need large quantities of raw materials, such as cotton, wool, hides, lumber, and iron ore (Fig. 187).

The nation depends upon distant lands for most of its raw materials, and upon its ships for collecting them from every quarter of the globe (Fig. 188).

These raw materials are next in importance to foodstuffs as articles of import trade (Fig. 187).

The great manufacturing plants turn out many more goods than are needed for home use. They are therefore sent in large quantities into the markets

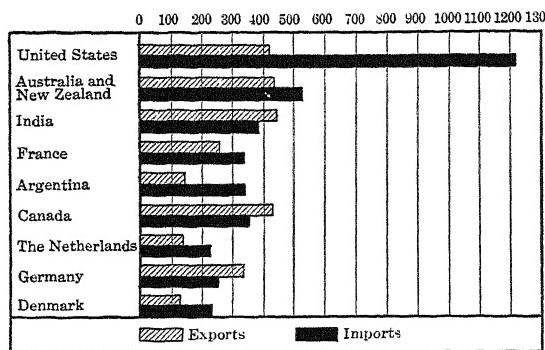


Fig. 186.—British exports to and imports from the leading nations of the world in millions of dollars for 1925.

of the world and constitute the bulk of British export trade (Fig. 187).

It takes many more ships to import the bulky food stuffs and raw materials than to export the less bulky manufactured articles. Great Britain has an abundance of coal fortunately located near the ports, and the owners of these ships are glad to take return cargoes of this fuel at cheap rates rather than to allow the ships to sail with no cargoes at all. Many countries have little or no coal and in these days of steam are glad to buy the coal of a country which has it to sell. Great Britain has

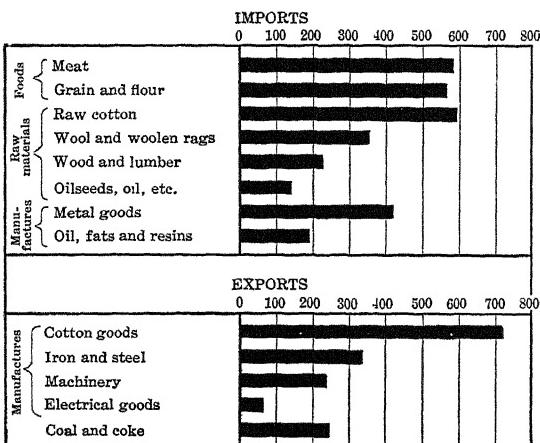
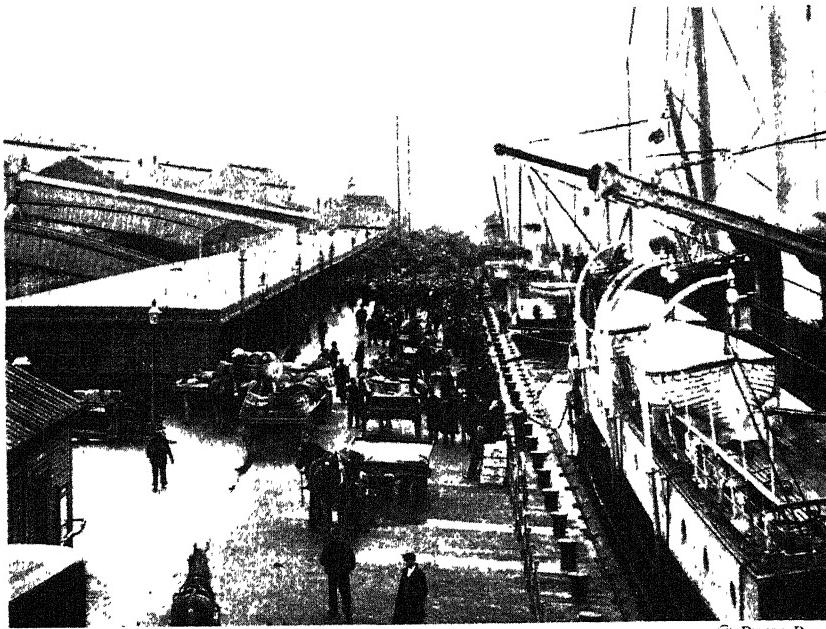


Fig. 187.—British imports and exports by articles in millions of dollars in 1925.

therefore become the greatest coal-exporting nation of the world. Do you think Great Britain is wise to sell so much of her coal? What do you think about selling our own?

Many foreign goods and goods from her colonies are sent to British ports to be distributed to other countries. Such trade is



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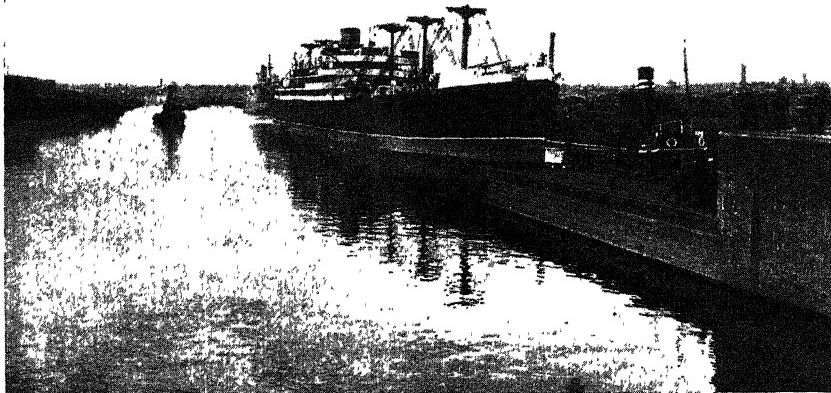
Fig. 188.—Steamers landing their passengers and freight at the Liverpool docks. There are many miles of such docks as these in the city of Liverpool, where steamers from all parts of the world bring and receive important cargoes. Why is Liverpool such an important commercial center?

not so extensive as the regular export and import trade, but it has come to be an important part of British commerce.

Great Britain's commerce depends upon her industries. The fact that Great Britain is a great manufacturing nation helps us to understand how she has come to have such a dense population, for manufacturing can be carried on only through the employment of many workers. Had Great Britain remained an agricultural country, she could have supported only a fraction of her present

population and could not have reached her present standing as a commercial country. Large imports of food and raw materials are necessary and must be paid for through the sale of her manufactured articles. The great population is largely employed in the making of these articles for export trade.

Advantages of position. Great Britain's position in relation to markets is excellent. Europe is by far the best market in the



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 189. — A great steamer arriving at the Manchester docks to load with manufactured goods for Australia. What cargo will she probably take? What cargo has she probably brought?

world for nearly all kinds of commercial articles. This is because of the large population and high degree of civilization. The continent needs all kinds of articles produced in civilized lands and seeks them in all parts of the world. This fine market is at Great Britain's very door on the east and gives her a distinct advantage over her rivals outside of Europe. Moreover, her position for trade with the continent is in some ways better than that of any other European country. As a center for the trade of both

northern and southern Europe her position is excellent. Great Britain is somewhat like a halfway station between the northern and southern ports of Europe. Her goods can be sent direct by water to a large number of the more important commercial centers, and transportation by water is cheaper than by rail. Moreover, the trade of northern Europe with southern Europe or with the world at large must pass directly by the British ports.

America is the second best market of the world, and no European country has a more favorable position for this trade than Great Britain.

On a world map (Fig. 160) note the position of the more important commercial areas, such as North and South America, southern Asia, South Africa, Australia, and the Far East. Remembering the Suez and Panama canals, note the central position of Great Britain with relation to these areas. No nation has a more favorable position with relation to the markets of the world.

In relation to possible enemies, Great Britain's position is fortunate. It is probable that the British Isles were once a part of the continent of Europe and have been separated from it by the sinking of the land. The separating water at its narrowest point, the Strait of Dover, is only about twenty miles wide, and the water is very shallow, as it is everywhere about the British Isles. The separation of the islands from the continent, even though by a narrow, shallow body of water like this strait, has made the country comparatively safe from invasion. The nation has suffered less from the ravages of war than most countries of continental Europe. Had the country been a part of the mainland during the World War, it might have suffered the horrors of invasion experienced by Belgium and France. This safe position has allowed the steady growth of industry and commerce. Great Britain's navy has been her great defense. She has not been obliged to maintain a large standing army like that of Germany and France, and the navy needs fewer men than the army. Most of her young men have been able to spend their time in productive industry and commerce rather than in training for war.

Advantages of rivers and harbors. The isolation of the British Isles has made necessary the building of a great fleet of merchant

vessels (Fig. 184). If you look at your map of the British Isles, you will note how deeply indented the shore line is. Many of the rivers have broad, open mouths. Sinking of the land permitted the sea to enter these river mouths and change them into bays and channels extending far into the land. Such irregularities of the coast furnish excellent harbors for shipping. The most conspicuous example is the Thames River, which makes the great city of London one of the most important seaports in the world. This is an advantage to both industry and commerce. Show how this must be true. The warm southwest winds from the ocean give the British Isles such warm winters that the harbors are never frozen. The Baltic harbors, which lie in much the same latitude, are generally icebound during the winter months.

Advantages of coal and iron. It is the coal and iron more than anything else that have made the large development of the industries possible, and we know that commerce depends upon industry. Modern shipping is also dependent upon coal and iron. Without these minerals, therefore, Great Britain could not have become such an important commercial nation as she is to-day.

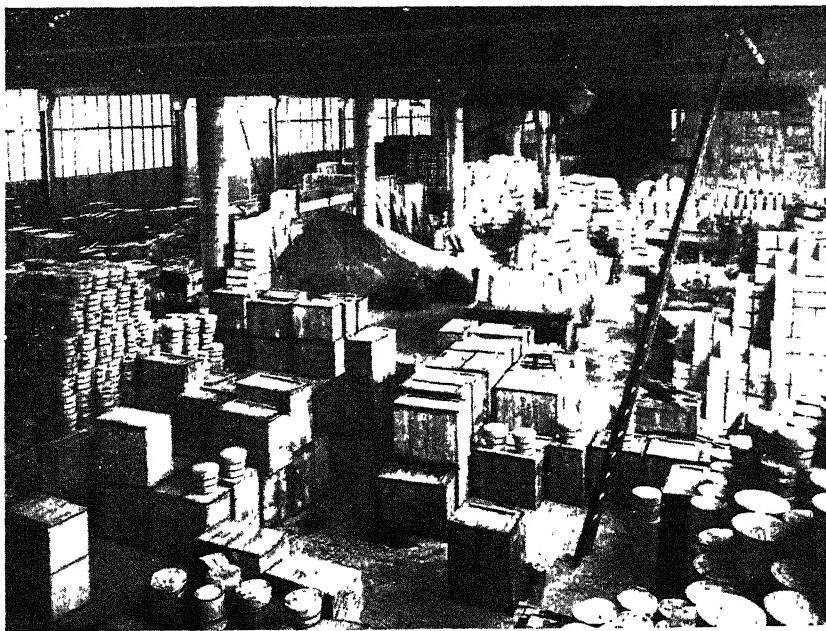
Advantages of an early start in manufacturing. The British people were using water power and steam to run their machinery in the manufacture of textiles long before any other nation had learned how to do this. This was due to the great inventions of which we learned in our study of British industries. What were these inventions, and who were the inventors?

We have also learned that the British were first to use coal in place of charcoal in the smelting of iron. The use of coal so cheapened the process of iron making that enormous quantities were produced.

The British were also first to use the famous Bessemer process in the manufacture of steel (Fig. 121). By this process great masses of iron are quickly converted into steel at a comparatively low cost. This and other more recent processes have greatly reduced the cost of steel, and to-day it is used largely in place of iron. These early inventions made possible the rapid growth of manufacturing, shipbuilding, and railroad construction. As a result of this, commerce grew at a rapid rate. Of course,

other nations were not long in learning about these new methods and in making use of them in their own industries. But the early start of Great Britain as an industrial and commercial nation gave her large advantage.

Advantages in colonial possessions. The colonies of Great Britain furnish the mother country with great quantities of food and raw materials in exchange for manufactured goods. When



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 190.—A typical Liverpool dock packed with food products from America.
Without such foreign cargoes Great Britain would soon starve.

we learn that about one-third of Great Britain's trade with other lands consists of this colonial trade, we can readily understand the commercial importance of the colonies.

How Great Britain is fed. Our own country furnishes much of the needed food (Fig. 190). By the use of cold storage and improved methods of canning we are able to supply large quantities of beef, mutton, pork, dairy products, fruits, and breadstuffs. Canada sends much the same, but in smaller quantities. Beef and mutton

are also sent in cold storage in large quantities from Argentina, Australia, and New Zealand. Wheat is furnished by Canada (Fig. 191), Argentina, Australia, Russia, and India. Dairy products come in from Denmark, Holland, Russia, France, Australia (Fig. 192), New Zealand, and Canada. Rice, tea, coffee, sugar, and spices are sent from Ceylon, India, and the Far East. Most of the coffee comes from Brazil, and most of the sugar from west-



Courtesy Department of Immigration and Colonization, Ottawa, Canada.

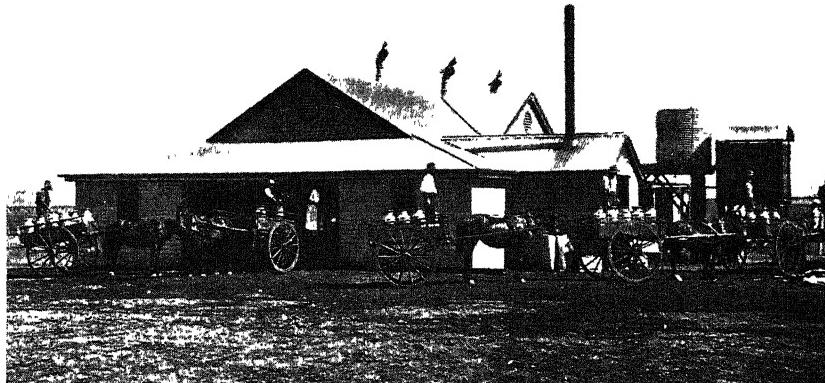
Fig. 191.—Extensive wheat fields of western Canada help to furnish Great Britain with grain. This is important both to Great Britain and Canada. Why?

ern and central Europe. The West Indies furnish much cane sugar. Fresh tropical fruits come largely from the Mediterranean countries, the West Indies, and Central America. The Mediterranean countries and California find it easy to supply dried fruits because their summers have little or no rain.

How Great Britain obtains her raw materials. Great Britain obtains the raw materials for her industries from regions as widely separated as those supplying food. By far the larger part of her cotton comes from the United States. Some comes from

India and Egypt. Wool, which is second only to cotton as a textile, comes mainly from Australia, New Zealand, Argentina, and South Africa. India supplies the jute which is extensively used in the manufacture of burlap. Much rubber is supplied by India and the Far East (Fig. 193).

With practically no forests Great Britain has to import large quantities of wood and lumber. Most of this comes from Russia,



Courtesy Department of Agriculture and Stock, Brisbane, Australia.

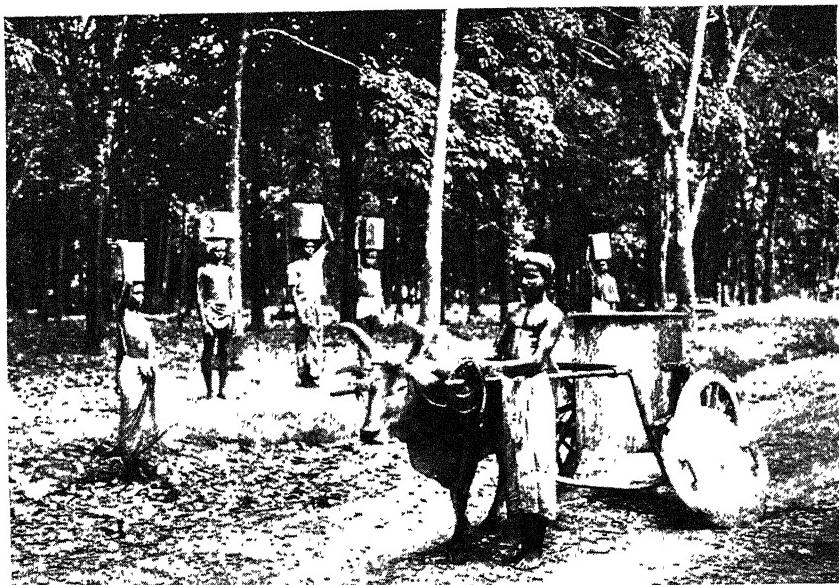
Fig. 192.—A cheese factory in Australia, where cheese is manufactured for shipment to Great Britain. Why should Australia be able to produce much cheese for foreign trade? Why should she send it to Great Britain?

Finland, Scandinavia, Canada, and the United States. Cabinet woods, such as mahogany, logwood, rosewood, and cedar, come largely from Central and South America and other tropical countries.

The East Indies, the island of Ceylon, the Malay Peninsula, and the Amazon and Congo valleys furnish most of the rubber. Petroleum, so useful in modern industry, comes mainly from the United States, Russia, Mexico, Rumania, Mesopotamia, and the Far East. Without the supply of these materials furnished

by so many and so widely scattered countries, Great Britain would find it impossible to carry on her great industries. The future will find her even more dependent upon her neighbors.

What Great Britain supplies to the world (Fig. 187). No other nation furnishes so much of the world's clothing as Great Britain. Her cottons, woolens, and linens are sent everywhere. The



Courtesy Goodyear Tire and Rubber Co.

Fig. 193.—Gathering rubber sap from rubber plantations in the East Indies to be manufactured into crude rubber for shipment to Great Britain.

woolens go largely to the colder countries, and the cottons to the warmer.

Iron and steel manufactures rank next to the cotton and woolen goods as articles of export. These manufactures include a great variety of articles, large and small, such as guns, jewelry, scientific instruments, clocks, watches, nails, chains, and many others. All these find a ready market in many parts of the world (Fig. 186), especially in those countries where little or no iron is produced and where manufacturing is not extensively carried on.

Great Britain exports more coal than all other nations combined.

The shallow waters about the British Isles, as we have seen, furnish excellent fishing, and the industry has become an important one among the British people. The cod, haddock, herring,



© Burton Holmes, photo from *Erving Galloway*.

Fig. 194.—A fish dock at Aberdeen, Scotland. The great fish upon the wharf have been taken from the waters of the North Sea by the fishing vessels at the side of the wharf. Traders are buying fish for their markets.

sole, and many other fish abound. These are taken in such large numbers that Great Britain has more than enough for her own use and is able to export to quite an extent. Fish are the only important food materials that Great Britain finds herself able to supply to the other nations. Germany and Russia have been her best customers. Great quantities of fish are used by the British people themselves. The North Sea is by far the best fishing

ground. Many of the most important ports for the industry are located upon the shores of the North Sea (Fig. 194). Among these are Aberdeen in Scotland and Hull and Grimsby in England.

QUESTIONS AND PROBLEMS

1. Why has Great Britain suffered but little from enemy invasions?
2. How did it happen that England made such an early start in industry and commerce?
3. Why is Great Britain a great shipbuilding nation?
4. What British industry employs the largest number of people?
5. What continent is the best world market? Why?
6. Which has the best position for world trade, Germany, Great Britain, Japan, or the United States? Why?
7. What do we mean when we say that Great Britain is a *free-trade* country?
8. Why is Great Britain very dependent upon other countries?
9. Why do the English send so many cotton goods into the tropical countries?
10. What seaports of the British Isles carry on most trade with the United States? Why? With Europe? Why?
11. What are the important British exports and imports?
12. Why has Great Britain become the leading commercial nation?

SUGGESTED PROJECTS AND EXERCISES

1. Make a little exhibit by collecting samples of English woolens, such as tweeds, cheviots, serges, and broadcloths, and English cottons, such as voiles, laces, and curtain materials. Collect advertisements.
2. Tell the story of how an English boy is dependent upon the nations of the world. Do this by listing his articles of food and the countries from which they are obtained. Do the same for his articles of clothing.
3. On an outline map of the world print the names of foods and raw materials in the countries which send them to Great Britain, and the ports which receive them. Trace steamship routes in blue from important points in these countries to the ports.
4. On an outline map of the British Isles shade coal-field areas. Locate with red dots coal-exporting cities. On an outline map of the world trace steamship lines in blue from British coal ports to the countries buying coal.
5. Make a list of the important British cities and state one or two of the most interesting facts about each.
6. No one activity or industry explains the importance of London, which ranks with New York as one of the two largest cities in the world. Assign to members of the class different topics about London, such as history, govern-

ment, transportation, and financial leadership, and devote a class meeting to reports on this great city.

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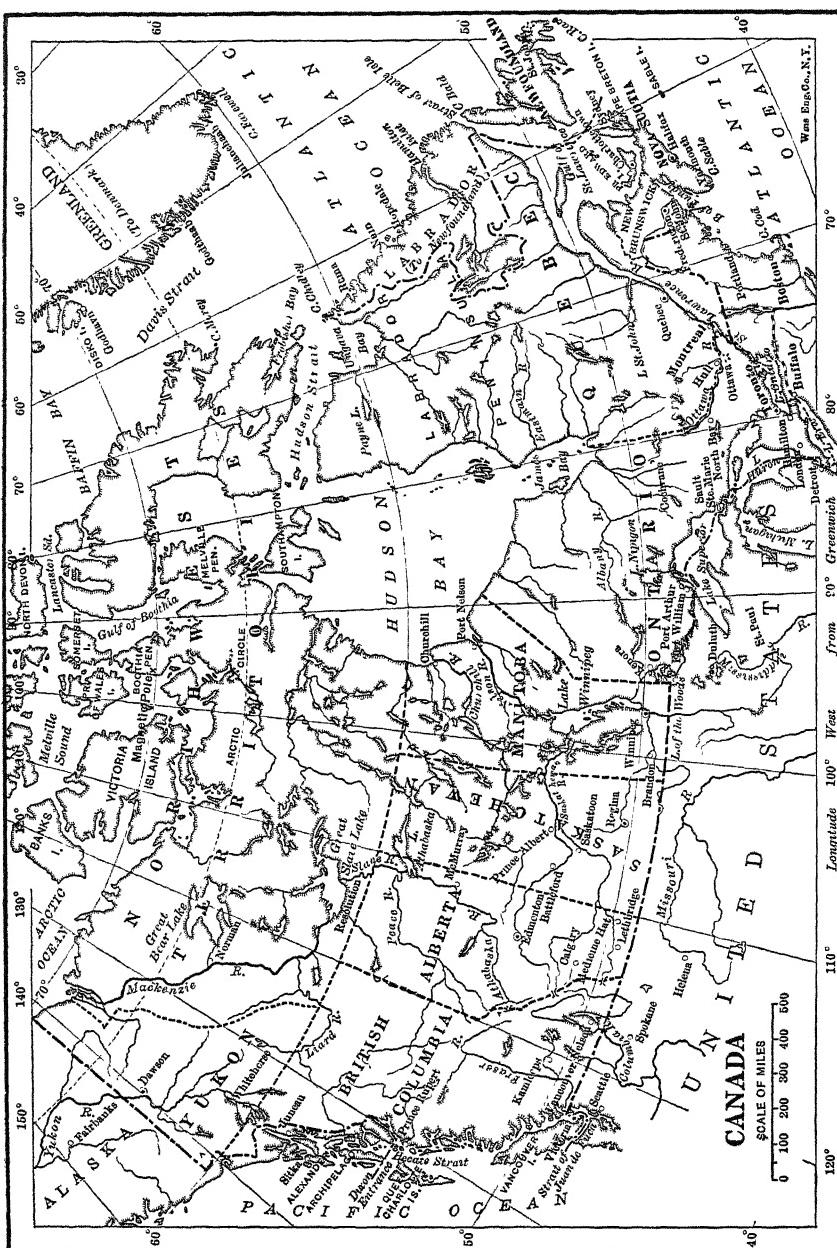


Fig. 195

CHAPTER XXI

GREATER BRITAIN

Great Britain's many interests. In this chapter we shall study Great Britain as an empire. Great Britain could not have the standing that she has were it not for the large areas which she controls in other parts of the world. One-quarter of the people of the world and one-fifth of its area are under British control. Moreover, Great Britain has in all parts of the world naval bases and coaling stations for her ships. Coaling stations are necessary, for even the large ships of to-day cannot carry all the coal they need for long voyages. Great Britain, with her many ships sailing to all parts of the world, needs more coaling stations than any other country.

Colonies, naval bases, and coaling stations widely scattered over the world give Great Britain an interest and an influence in every continent and every ocean. Her trade with her colonies makes up a large part of her commerce (Fig. 186). In this chapter we shall study some of the more important regions over which Great Britain has more or less control. We shall also learn something of the means used to hold and increase her control in different parts of the world.

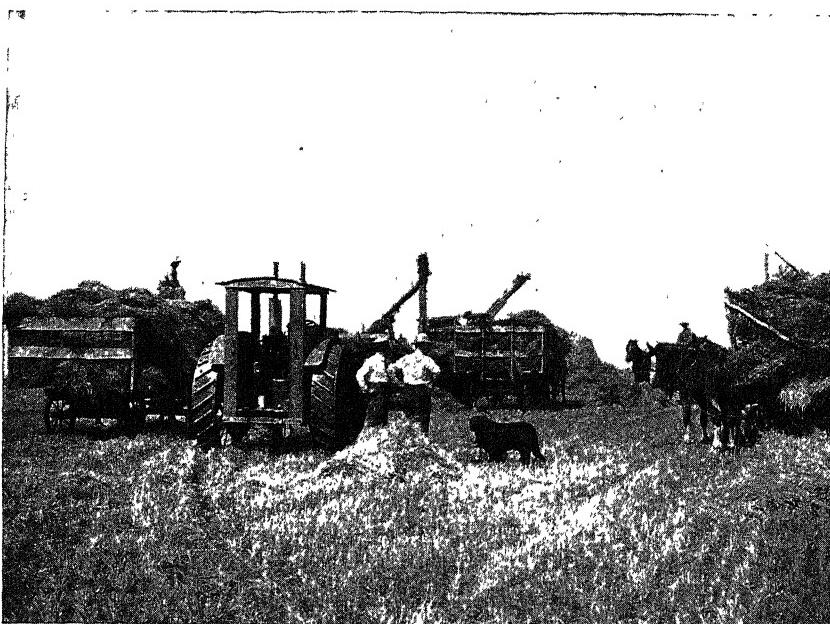
CANADA

Canada — our next-door neighbor. Canada is one of our nearest neighbors and the one with whom we have closest relations. Canada is really a relative as well as a neighbor. The people of Canada not only speak the same language that we speak, but the two countries have been settled by the same races. Indeed, at the time of the American Revolution the thousands of colonists who favored the British cause left the American colonies to make their homes in Canada. Ever since that time there

has been a constant migration of people in both directions across the boundary between the two countries.

Fortunately, our relations with our neighbor have nearly always been friendly. Along the border between the two countries there are no forts or soldiers, and on the Great Lakes there are no naval vessels of any kind.

The country as a whole is known as the Dominion of Canada. The settled portion of the Dominion is divided into parts, corre-



Courtesy Department of Immigration and Colonization, Canada.

Fig. 196.—Threshing wheat on the plains of central Canada. Much of this wheat is shipped across the Great Lakes and down the St. Lawrence to European ports. Wheat makes up about one-fourth of Canada's exports.

sponding to our states, which are known as *provinces*. Newfoundland and Labrador are not a part of the Dominion. Their government is entirely distinct from that of Canada.

Agricultural products of Canada. Canada's most valuable exports are the products of her farms and ranches. The southern part of the central plain of Canada is a rich farming country, a continuation of our own wheat and cattle lands. In Manitoba,

Saskatchewan, and Alberta large crops of wheat are raised (Fig. 196). The raising of grain has been extended farther and farther north as more land was needed. The long days of higher latitudes make it possible for grain and vegetables to ripen in a much shorter time than farther south. Agricultural departments and experiment stations are always in search of seeds adapted to unusual conditions. Whenever they succeed in obtaining wheat or other grains that will ripen in the short season of the northern parts of these central provinces, they have aided the farmers of those sections, and have thus pushed the borders of the farm lands farther north. Dry-farming methods have also succeeded in extending the wheat lands farther west.

The soil of these plains is very rich. When the land is first plowed, the crops obtained are much larger than from the lands which have previously been cultivated. For this reason every effort is made to make use of as much of this rich land as possible. Winnipeg is the great wheat market and flour-milling center. The products of this part of the country are sent very largely to Great Britain. Can you see how Montreal and other eastern ports owe much of their prosperity to the farmers of the central plains of Canada?

On the plains east of the Rocky Mountains, which are too dry for raising wheat, many cattle, horses, and sheep (Fig. 197) are raised. Dry, warm winds coming down from the Rocky Mountains melt the snows of winter and thus uncover the dried grasses. As a result the animals are supplied with food during the winter with little effort on the part of their owners. Winnipeg is a meat-packing center as well as a wheat and flour market.

Much farming land still undeveloped. There are still millions of acres of undeveloped land in central Canada on which grain or cattle could be raised. The government offers the land to settlers under very favorable conditions. The government is eager to have settlers take up the land for the reason that every acre cultivated adds to the wealth of the country in many ways. Every farmer must have lumber for his buildings, machinery for the farm, and food and clothing for his family. Thus, you see, the market for many kinds of goods is increased.

The railroads are also interested in having settlers take up farms. The transcontinental lines running through this part of the country have been built at great cost. Every new area opened up for farming gives more wheat to the roads for transportation. The roads also profit by transporting the farmers and their families to the region and by carrying to them the



Courtesy Department of Immigration and Colonization, Canada.

Fig. 197.—The semi-arid regions of western Canada, like corresponding regions of the United States, furnish excellent pasturage for sheep.

articles needed on the farms and in the houses. If you examine carefully the advertising sections of magazines, you will find advertisements of these lands by either Canadian railroads or some branch of the Canadian government. Emigrants from the British Isles and other countries of Europe have become prosperous farmers in similar areas on which they have settled.

The United States no longer has large areas of undeveloped lands to be had almost for the asking. For this reason thousands

of farmers from the United States leave our country each year to take up wheat lands on the extensive plains of western Canada.

The farms of eastern Canada. East of Manitoba, the agriculture of Canada closely resembles that of the more thickly settled parts of northeastern United States. Many cows are kept for dairy products (Fig. 198). Canada is one of the leading countries



Photo from Ernest Peterffy.

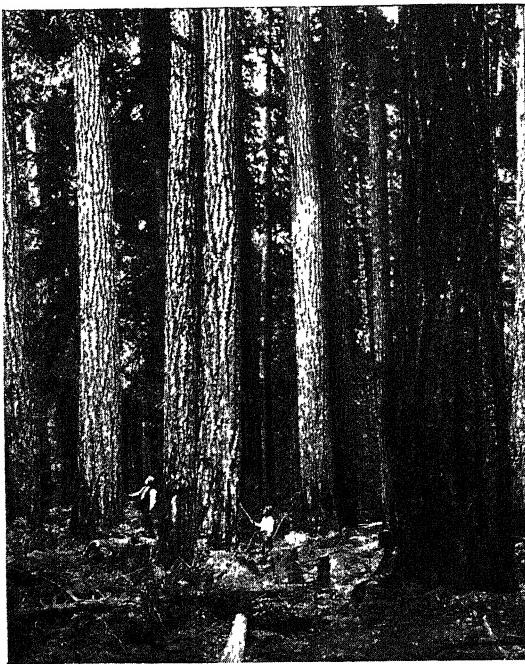
Fig. 198. — A herd of Canadian cattle on a Canadian dairy farm. Canadian dairy products not only find a market in the cities of that country but are exported in large quantities. Why is the eastern part of the Dominion better adapted to farming than the central and western parts?

in the production of cheese. Instead of raising a single crop, such as wheat, the farmers of the eastern part of Canada generally raise a variety of crops. Besides vegetables, fruits are raised in large quantities. The Annapolis Valley of Nova Scotia is noted for its apples, and on the plains of southern Ontario apples, peaches, and grapes are grown. Southern Ontario is known as the "garden of Canada." Many thousand barrels of apples are exported to Europe.

Canada rich in forests. East of central Ontario the great ice sheet left much of the soil thin and rocky. Fortunately, extensive areas of eastern Canada are covered with forests. This forest belt extends westward to the north of the wheat and grazing lands, where it joins the Rocky Mountain forest area (Fig. 199).

Canada's forests constitute one of her greatest resources.

The rugged lands of eastern Canada furnish water power, some of which is used as power for sawmills and for grinding logs into paper pulp. There are large lumber mills at St. John and Fredericton in New Brunswick, at Ottawa and Montreal in Quebec, and at Toronto in Ontario. Many other mills are found scattered over southeastern Canada. With our constantly diminishing forests we must look to Canada for supplies of lumber and wood pulp.



Courtesy Department of Immigration and Colonization, Canada.

Fig. 199.—A thick forest of Douglas fir trees in the valley of the Fraser River, British Columbia. In what part of Canada and the United States will the best markets for this lumber be found? Why?

Canada also sends the products of her forests to Great Britain and other European countries.

Furs and fur farming. The Canadian forests are the homes of a great variety of wild animals which have been hunted for their furs ever since America was discovered. Explorers came to this region not in search of gold and precious stones, but for furs. Many of the settlements started as fur-trading posts.

Furs have always been secured by shooting or trapping wild animals. Two farmers of Prince Edward Island, however, decided to make a trial of raising silver-black foxes in captivity. The skins of these animals bring very high prices in the fur markets. The farmers succeeded in catching some of these animals in traps and placed them in a wire inclosure. They found a ready market at high prices for the foxes which they raised—not only for the skins but for pairs of the animals for breeding purposes. A pair of foxes has been sold for as much as \$35,000. The demand for the animals for breeding purposes increased as others learned of the great success of the men who first tried the experiment. Fur farming is now undertaken in other parts of the country and with animals other than foxes.

Canada's mineral wealth. The most valuable mineral deposits of Canada are gold, silver, nickel, and coal. The largest amount of gold has been mined in the famous Klondike region. The Rocky Mountain region of Canada has produced gold to the value of several hundred million dollars. Northern Ontario has some of the richest silver mines in the world, besides deposits of copper, nickel, and cobalt. Paints or dyes containing cobalt are used in decorating china, in coloring glass, and in giving a blue tinge to paper.

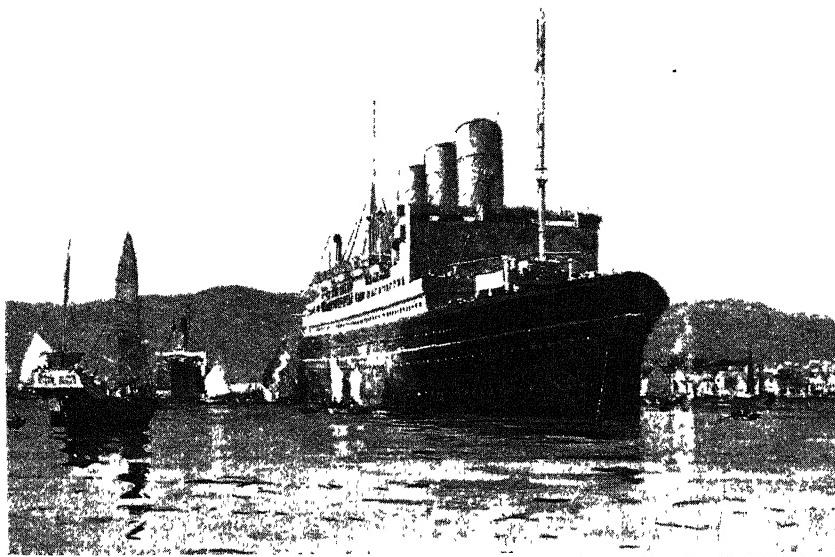
The coal mines of Canada are in the eastern and western parts of the country. The greater part of the coal mined in the East is obtained from deposits on Cape Breton Island. This coal is used for domestic purposes and for manufacturing throughout eastern Canada. Some of it is exported to New England ports.

In the plains just east of the Rocky Mountains are extensive beds of lignite. These beds have not been worked to any great extent. The other coal deposits are those of British Columbia. It is interesting to note that eastern and western Canada send coal to the United States, while central Canada, having no coal of its own, imports it from our country.

Fish and fishing. We have already learned of the important salmon fisheries of the rivers of the Pacific coast. Fisheries of the eastern coast are also of great value. The fishing industry of this part of the country is very much like that of northeastern

United States, which we have already studied. Many of the fishermen of the Maritime Provinces work in sawmills and pulp mills at times when they cannot get employment on fishing boats. Cured fish are exported to the United States and to many of the countries of Europe.

Trade routes. Like the United States, Canada is a country of great distances and therefore needs many miles of railroad. This



Courtesy Canadian Pacific Railway.

Fig. 200.—The *Empress of Canada*, the largest passenger steamer on the Pacific Ocean. This is one of the steamers owned by the Canadian Pacific Railway. It sails from Vancouver to ports of the Far East.

need is very well supplied by the great railroad systems of the country, which have been strongly supported by the Canadian government. The Canadian railroads are among the longest railroads on the continent. They connect eastern and western ports (Fig. 195), and maintain lines of ocean-going steamers on both the Atlantic and the Pacific (Fig. 200).

Montreal, on the St. Lawrence River, is Canada's chief port. When the St. Lawrence is frozen, much of Montreal's trade goes through St. John and Halifax (Fig. 195). Some of Canada's exports are also sent out through the ports of northeastern United States, especially in the winter months.

Trade with the United States. Canada's trade with the United States is even greater than her trade with Great Britain. Some of her chief exports to the United States are lumber, wood pulp, flaxseed, copper, and nickel. Coal, textiles, machinery, and petroleum are among her principal imports from our country.

AUSTRALIA

How Australia became a British colony. Captain Cook, an Englishman, explored the coasts of New Zealand and Australia (Fig. 201) in 1770 and took possession of them in the name of the king of England. Australia formerly, however, had been claimed by the Dutch and was long known as New Holland. For many years English criminals were punished by being banished to Australia. Other Englishmen emigrated to that country, invested British capital there, and developed the resources of the country. England's mills needed greater supplies of wool. Companies were formed in England with the purpose of establishing the sheep-raising industry in Australia. It was in this way that one of the great occupations of the country had its beginning. The great wealth of the country lies in its farms (Fig. 202) and ranches.

"The dead heart of Australia." Although the country is about as large as the United States, by far the greater part is desert. This is because the highlands near the eastern coast shut out the southeast trade winds from the central and western parts of the country. There is, of course, abundant rainfall east of the highlands. The desert occupying the central part of the country is sometimes referred to as "the dead heart of Australia." Examine the map of the country to note in what part nearly all the cities and towns are located.

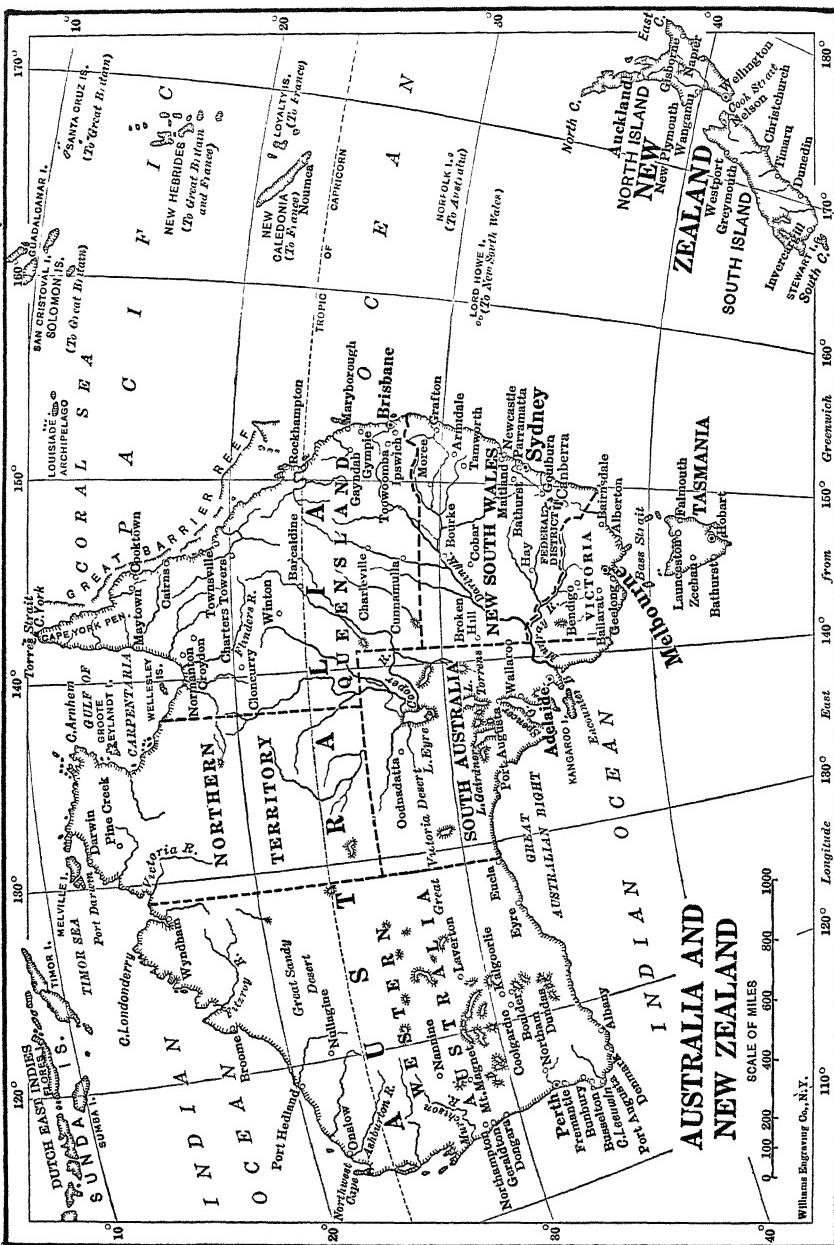


Fig. 201

Why Australia raises many sheep. Just west of the mountains, although there is not enough rain for farming, there are thousands of square miles of rich grasslands on which sheep thrive (Fig. 204). The land suitable for grazing extends for a distance of about five hundred miles west of the mountains. It is here that the largest flocks of sheep are raised (Fig. 203). Australia not only produces more wool than any other country, but her wool is of the finest quality. More than half of the sheep of the country are raised in New South Wales. Unfortunately the rainfall in the grazing areas is uncertain. It sometimes happens that for several years the rainfall is much less than usual. At such times millions of sheep die for want of food.

The ranchmen have also been troubled by rabbits. Like sheep, these animals feed on grass. They are so numerous that, unless many were killed, there would be no food for the sheep. One of the means taken to

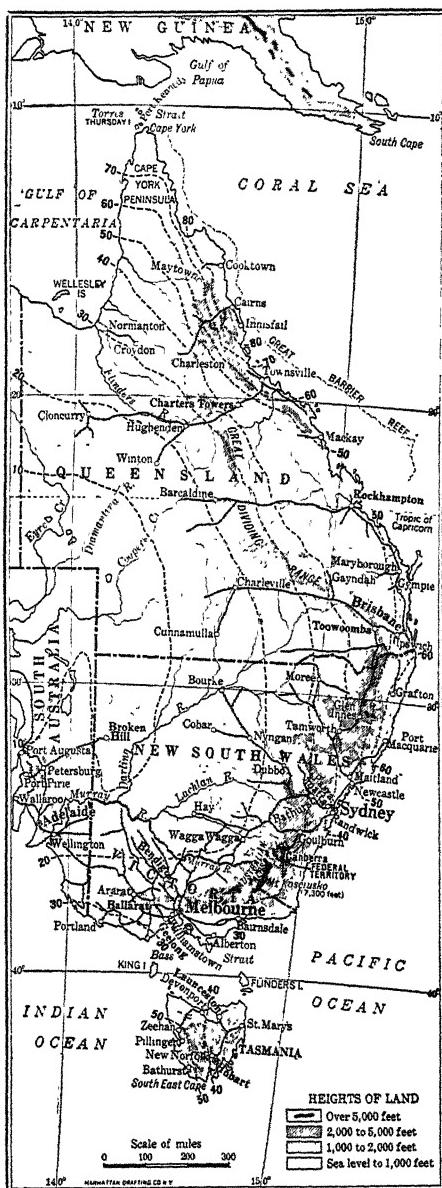


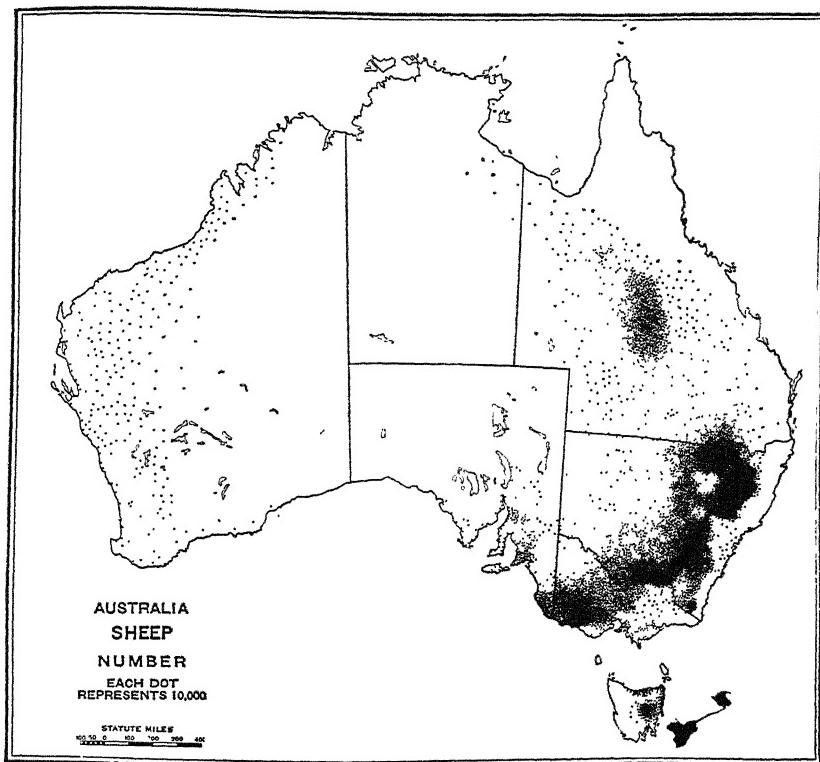
Fig. 202. — The eastern part of Australia. The numbers at the ends of dotted lines show inches in rainfall.



Fig. 203. — One of the many flocks of Australian sheep, which provide wool for all the manufacturing countries. The value of the wool exported in a single year is nearly one-fourth of a billion dollars.

Courtesy U. S. Bureau of Foreign and Domestic Commerce.

destroy them is that of the *drive*, or rabbit hunt. All the ranchmen in the neighborhood mounted on horses ride over the country for miles and drive the rabbits into a small field surrounded by a high fence. Here they are killed by hundreds. In recent years use has been found for the animals. Shiploads of frozen rabbits



From The Geography of the World's Agriculture.

Fig. 204. — Where Australia's sheep are raised.

are now sent to England, where their flesh is used for food and their fur in making felt. Some of the finest rabbit fur is used as a substitute for ermine. It is claimed that some of the "ermine" used to decorate the royal robes is really rabbit fur.

Where the wool is marketed. If you were to visit the sheep ranches, you would see great wagons loaded high with bales of wool on their way to the railroad. If you were to follow the wool

to Melbourne, Sydney, or Adelaide, you would find at the wharves steamers which take the wool to Great Britain, other European countries, and the United States. The greater part of the wool exported by Australia and New Zealand, which is also a British colony, is sent to Great Britain. Besides wool, large amounts of frozen meats are also exported by these two countries.

Other farm products. In Victoria, where the rainfall is heavier and where the pastures are better than farther west, many dairy cattle are raised. In a recent year Australia exported more than 70,000,000 pounds of butter, practically all of which went to Great Britain.

Parts of western Victoria have a climate like that of southern California. In places where irrigation is possible grapes and plums are raised. These fruits are dried in the sun and exported to Great Britain as raisins and prunes. Other fruits, such as peaches and apricots, are raised here and dried in a similar way. The apples of Tasmania are sent to England as fresh fruit at times when apples raised in the northern hemisphere are no longer to be had.

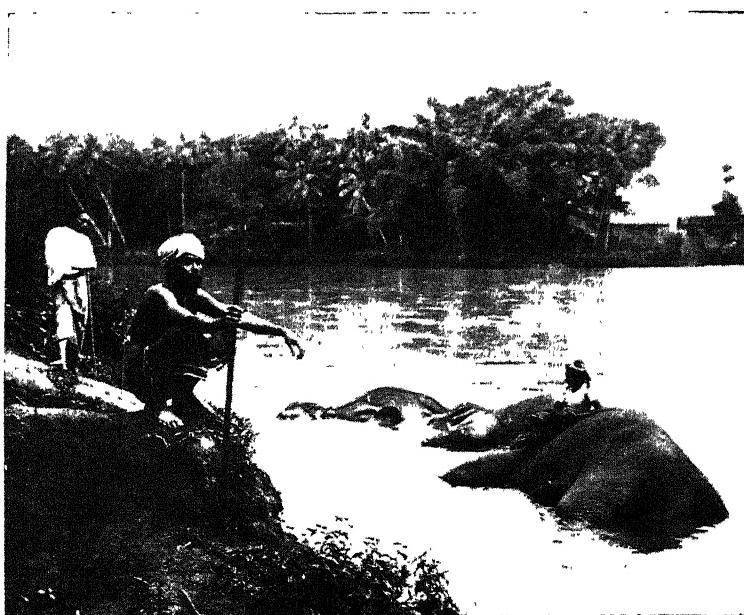
Australia not a manufacturing country. Australia mines considerable coal, some of which is sent as far as California. Although coal is mined, there is little manufacturing. For this reason Great Britain finds in this colony an excellent market for manufactures of iron and steel, cotton and woolen goods, and clothing. The commerce of Australia is very largely with England because the colony has been settled almost wholly by British people and because much British capital is invested there. The chief ports are Sydney, Melbourne, and Adelaide (Fig. 201).

INDIA

India a valuable colony. India came into the possession of the British government through the activities of the British East India Company, organized about 1600. This company really governed the country for a number of years. Control was finally taken over by the British government. Several colonies of Great Britain have areas larger than that of the mother country, but

India is the only one that has a larger number of people. Its population of 315,000,000 is about seven times that of the British Isles. A country that can support so many people must have large resources and must be a valuable possession. As you would expect, Great Britain's trade with India is greater than that with any other colony.

Columbus sought a route to India. Before the ocean route around the Cape of Good Hope had been discovered, slow-moving



Courtesy American Express Co.

Fig. 205.—Even the elephant seeks relief from the hot, sultry climate of India. The vegetation and the clothing worn by the natives also show the influence of the climate.

caravans brought from India spices, silks, fine cottons, and other valuable products to the wealthy merchants of Mediterranean countries. In those days the cost of transportation was very great. Articles carried from India to European countries were so expensive as to be luxuries. To-day the great wealth brought from India in large ocean freighters is not spices and pearls but wheat, cotton, and jute, the necessities of life rather than the

luxuries. If the caravans had brought wheat from India, the price would have been so high that no one could have afforded to buy it. Without modern methods of transportation, therefore, India would be of little value to Great Britain.

Conditions affecting agriculture. India lies within the monsoon region of southeastern Asia (Fig. 305). A large part of the



© Ewing Galloway.

Fig. 206. — Irrigating a rice field in India. The rice field is shown on the left side of the picture. How does the water reach the field? This is the same method that has been used for hundreds of years. What modern methods are used for doing this work?

country has a very warm, moist climate (Fig. 205). Here winds from the sea bring moisture to the many fertile plains during the summer while the crops are growing. Moreover, since no part of India is far from the tropics, several crops a year can be raised in nearly every section of the country. We may think of India as consisting of three parts, the triangular plateau lying between the Arabian Sea and the Bay of Bengal, the lofty mountain ranges of

the Himalayas on the north, and between these two the great valleys of the Indus, the Ganges, and the Brahmaputra.

The food supply of the country. Rice and millet are the chief foods of the inhabitants of India. These crops are sometimes very small or even fail altogether in parts of the country where the rainfall is uncertain. Frequently thousands of people have died of famine. Since the British have controlled the country, many railroads and irrigation projects have been built. With irrigation (Fig. 206) there is less dependence upon rainfall. The railroads make possible the carrying of food from one part of the country to another. Before the railroads were built, there was often abundance of food in one part of the country while in other parts the people were starving.

What India sends to Great Britain. The chief exports that India sends to Great Britain are all products of the soil. The most valuable export is tea. This is raised on the foothills of the eastern Himalayas. Tea requires a warm climate, plenty of rainfall, and the good drainage which the hills afford. As we learned in our study of Scotland, practically all the jute produced in the world



Courtesy International Harvester Co.

Fig. 207. — These men with the aid of water buffaloes are plowing a field on which rice is to be planted. Rice thrives on land that is covered with water for a large part of the growing season. As the time for harvest approaches, the water may be drained off.

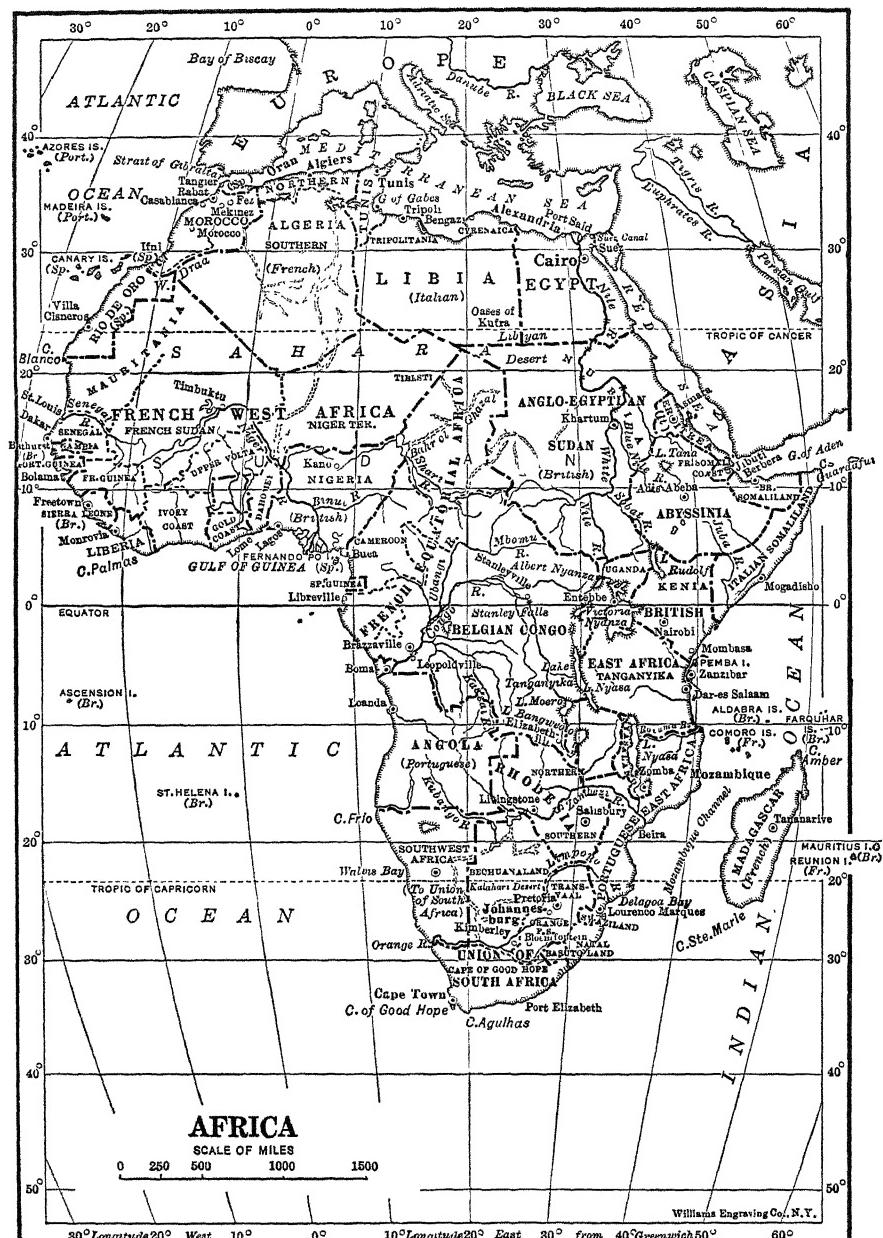


Fig. 208

is raised in India. Jute and burlap are valuable exports. Rice is raised in large quantities on the flood plains and in other places where irrigation is possible (Fig. 207). Owing to the great demands at home a very small part of the crop leaves the country.

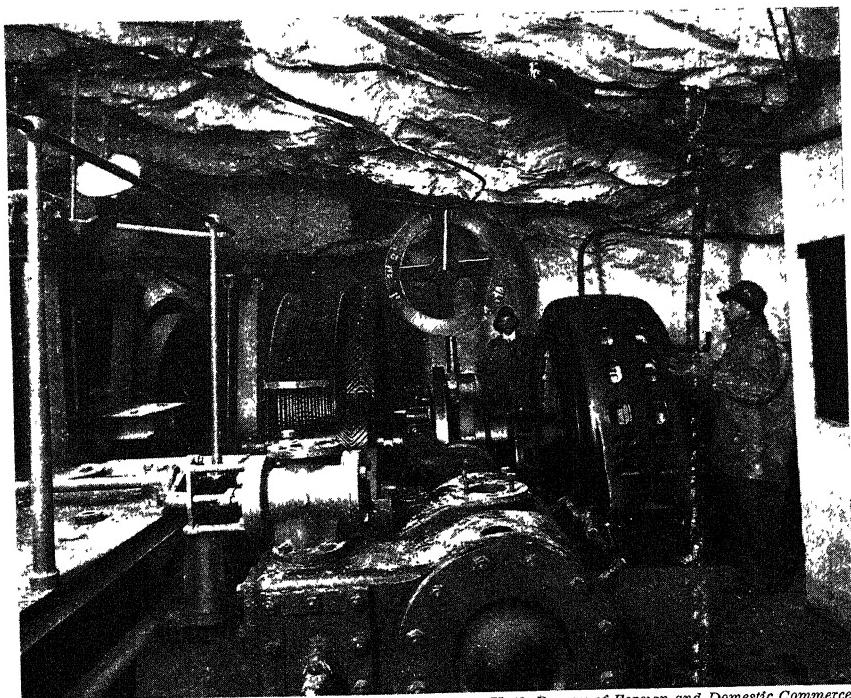
Cotton thrives on the rich black soil of the plateau. Some of the crop is sent to England, but considerable amounts are now used in the mills of India. The country has several advantages for cotton manufacturing. There is some coal and an abundance of cheap labor, and the raw material is produced in the country. Moreover, the millions of people require immense quantities of cotton goods. Thus there is a large market close at hand. India also supplies Japan with the greater part of the raw cotton used in that country. Jute is exported from Calcutta, which, with the exception of London, is the largest city in the British Empire. Cotton is shipped from Bombay. This city is near the cotton fields of the plateau and is easily reached by way of the Suez Canal. Much cane sugar also is raised.

What Great Britain sends to India. India offers an excellent market for British manufactures. By far the most important import from Great Britain is cotton goods, valued at many millions of pounds. Other imports from that country are iron and steel manufactures and machinery. As England continues to send textile machinery to the mills of India, she will find a smaller demand for the products of her own factories. Already India exports cotton goods in considerable quantity.

SOUTH AFRICA

How South Africa became British. Cape Colony was settled by the Dutch, but it was seized by the British in 1806 and was awarded them by treaty in 1814. Some of the Dutch settlers who were unwilling to be governed by the English "trekked," or moved, northward and founded two small republics, the Orange Free State and the Transvaal. Rich deposits of gold were discovered in the settlements founded by the Dutch, or "Boers" as they are called. When news of the finding of gold spread, the English entered the republics in large numbers and became owners

of much of the mining property. Trouble arose between the Dutch and the English which resulted in the Boer War. The British were victorious and gained control of both of the republics. In 1910 the Cape of Good Hope, Natal, the Transvaal, and the Orange Free State were united under an act of the British Parliament to form the Union of South Africa. The Union of South



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 209.—This monster electric motor, installed in a South African gold mine, was made in the state of New York. It is used to lift the ore from the mine to the surface.

Africa is a self-governing colony having the same relation to Great Britain as do Canada, Australia, and Ireland.

Before the Boer War the British had already gained possession of territory lying to the north and west of the Dutch republics. The British territory now extends north to Lake Tanganyika and west to Angola or Portuguese West Africa and the land formerly held by Germany (Fig. 208). South Africa has proved a rich pos-

session for Great Britain. It produces more gold (Fig. 209) and more diamonds than any other region of the world. The raising of cattle and sheep is likewise an important industry. South Africa is also a market for the manufactured goods of Great Britain. Cape Town is the chief city and port.

EGYPT

Egypt's ancient civilization. Egypt had reached a high state of civilization and for thousands of years had had a strong government while most of the inhabitants of Europe were still barbarians. About seventeen hundred years before the founding of Rome Egyptians carved the Sphinx and built the great pyramids, which are the tombs of their kings. They had made great progress in industry and science. Their skill as workmen is shown by their ability to put in place the enormous stones of the pyramids. The linen used to bind the bodies of their dead is said to be as fine as any made to-day. But since the days of the Pharaohs, or earliest rulers, Egypt has been governed by foreigners. One after another the Persians, Macedonians, Romans, Arabs, Turks, French, and English have governed the land. Even to the time of the World War, when the country was formally made a British protectorate, Egypt was paying tribute to the Sultan of Turkey. In 1922, however, Great Britain gave Egypt almost complete independence.

Egypt's resources and trade. Without the Nile River Egypt would be a sandy waste like the Sahara to the west. The part of the country on which crops can be raised is limited, except in the case of the broad delta, to a strip of land about ten or fifteen miles wide which is reached by water from the river. For many centuries Egyptians have pumped water from the river to their farms and gardens on the flood plains. On the irrigated plains and delta crops of cotton (Fig. 210), rice, wheat, and sugar are raised.

British capital has been invested in the building of the Assuan Dam and other irrigation dams. As a result, much more of the arid land can be cultivated and larger crops of cotton, rice, sugar

cane, and grain can be raised. British capital invested in mills and factories has greatly increased the industries of the country. It has also aided transportation by the building of railroad lines.

The chief exports to Great Britain are cotton, cottonseed oil, seed-cake, and eggs. Great Britain exports to Egypt cotton and woolen goods, manufactures of iron and steel, and coal. Cairo is the largest city, but Alexandria is the chief port.



Courtesy James McDowell, Hamilton and Sharp Mfg. Co., Boston.

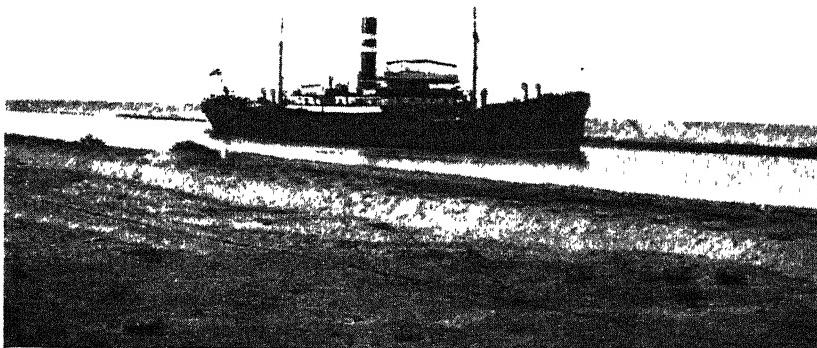
Fig. 210. — Harvest time in the great cotton fields of Egypt. Much of this cotton is sent to the United States to be used in making automobile tires and cotton goods of fine quality.

The Cape-to-Cairo Railroad. The British plan to continue southward the railway running from Cairo along the Nile River until it meets the railway northward from Cape Town through the British possessions in southern Africa. This project is known as the Cape-to-Cairo Railroad, and when completed will aid in developing the greater part of Africa. Railway lines passing through the possessions of other countries will connect this road with ports on the Atlantic and Indian oceans. The Cape-to-Cairo Railroad was planned by Cecil Rhodes, for whom Rhodesia

was named. He did much to develop South Africa and to bring it more fully under British control. It was his purpose to extend British influence over all eastern and southern Africa.

GREAT BRITAIN'S ROUTE TO INDIA

One of Great Britain's problems has been the protection of her routes to India. It was for this purpose that she first gained



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Fig. 211. — A steamer passing through the Suez Canal. Why was it easier to build a canal here than through the Isthmus of Panama? Of what value is this canal to Great Britain?

an interest in Egypt, for that country borders the Suez Canal (Fig. 211). She has made Gibraltar, at the entrance to the Mediterranean Sea, one of the most strongly fortified naval bases in the world. This strong base not only aids in controlling the route to India but also helps to protect Egypt. Malta, an island in the Mediterranean, which was annexed to the British crown in 1814, also lies in the route to India. It is considered one of the most important ports of call in the world. Most of the British

ships in the Mediterranean are fitted out and repaired at this port.

For many years Great Britain sought to prevent the Dardanelles from falling into the hands of Russia. She feared that if Russia had free access to the Mediterranean her own route to India might be cut off. In seeking ice-free ports Russia tried to secure harbors on the Persian Gulf and the Arabian Sea. Great Britain would not allow Russia to gain possession of those ports. She felt that here, too, her route to India would be in danger. For the same reason, if Germany had attempted to complete her plans for a Berlin-to-Bagdad railway (Fig. 217), she would have met with strong objection by Great Britain. Probably India has brought the interests of Great Britain into conflict with the interests of other nations more than any other of her possessions.

QUESTIONS AND PROBLEMS

1. Why does Great Britain need coaling stations in all parts of the world?
2. Show how the resources and industries of the different parts of southern Canada correspond with those of adjoining parts of the United States.
3. How is Canada benefited by being closely allied with Great Britain?
How is Great Britain benefited by being closely allied with Canada?
4. What have American farmers to gain by emigrating to Canada?
5. Why are nearly all the important cities and towns of Australia in the southeastern part of the country?
6. What parts of Australia are well adapted to the raising of sheep? Why?
What difficulties do the ranchmen have to meet?
7. How is the trade between Australia and Great Britain of value to each?
8. How did European trade with India in the days of Columbus differ from India's trade to-day? Why the change in the character of the trade?
9. Why are famines less frequent in India than formerly?
10. How has British control increased the productiveness of the country?
11. What do you think are the possibilities for great increase in the manufactures and commerce of India?
12. Why have many Englishmen emigrated to South Africa?
13. How has Great Britain's influence in Egypt helped her to retain control of India?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the world color all areas controlled wholly or in part by Great Britain. Print the names of the chief ports of these regions. In col-

onies and protectorates print the names of products sent to Great Britain. In Great Britain print the names of the chief exports. Draw trade routes connecting Great Britain and her principal colonies.

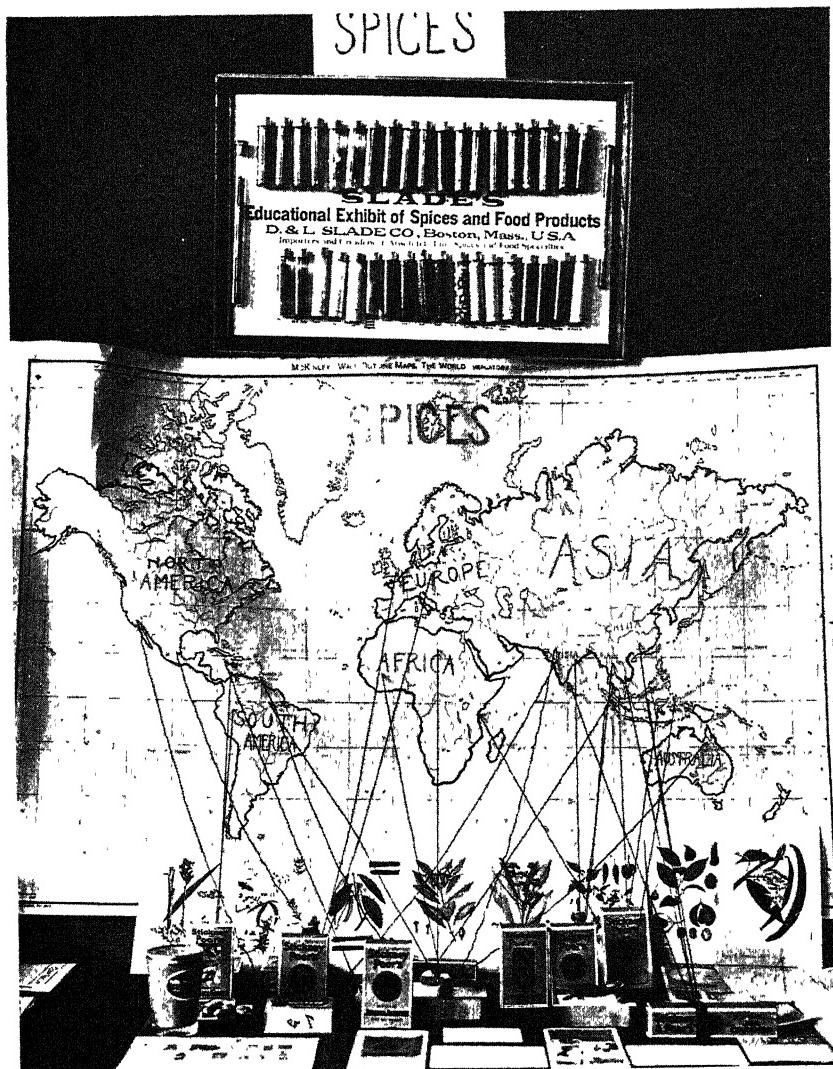


Fig. 212.—Perhaps you have worked out some such project as this in one of your earlier geography courses. Lines running from the products to the map show in what parts of the world the spices were produced.

2. Collect newspaper clippings to show Great Britain's interests in many parts of the world.

3. Appoint members of the class or committees to report on special subjects relating to the colonies and protectorates of Great Britain in different parts of the world.

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CENTRAL EUROPE

Scale of statute miles
0 50 100 200

Railroads Canals E
Capitals of countries @

Capitals of

Fig. 213

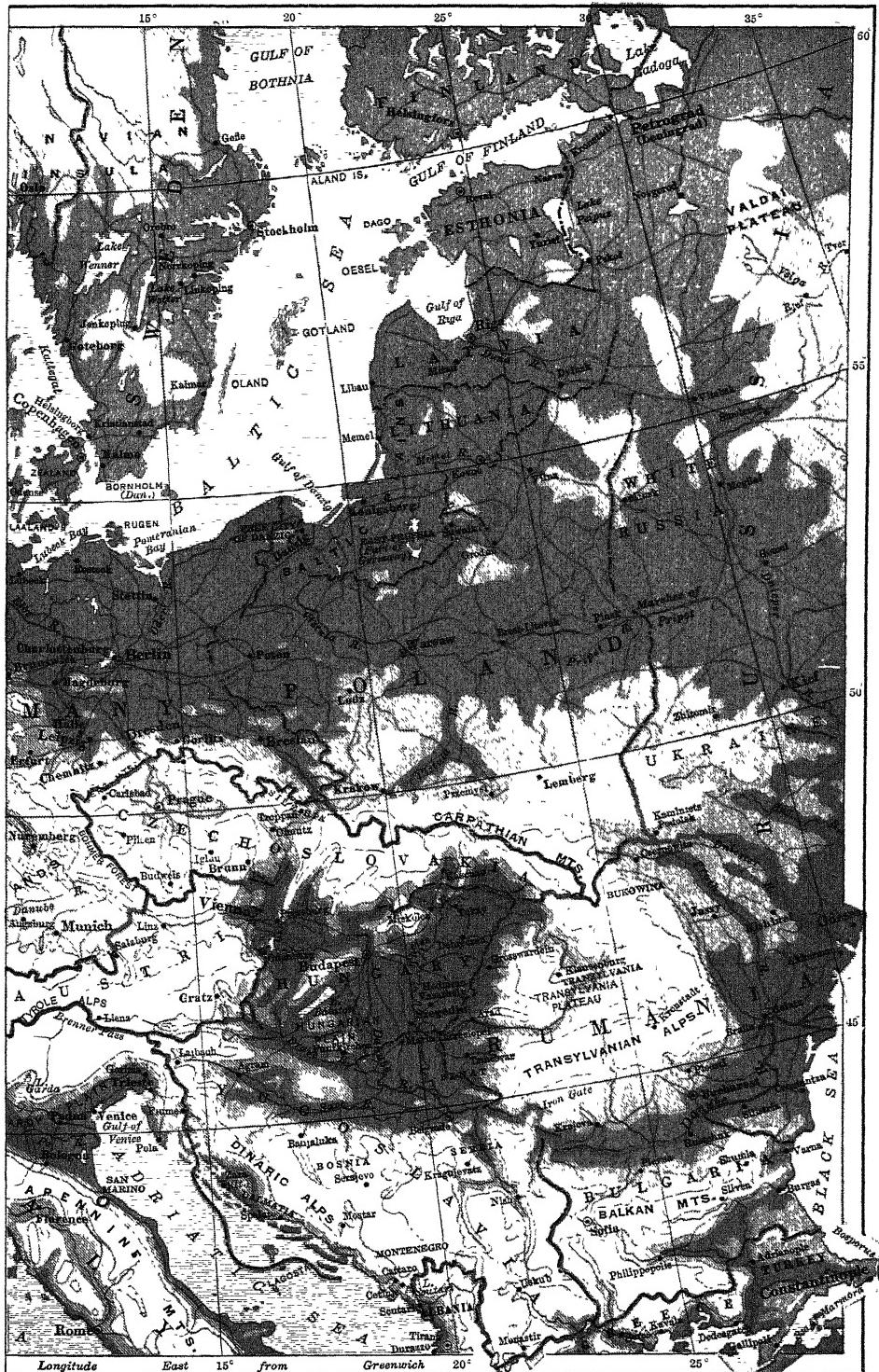


Fig. 213

CHAPTER XXII

THE GROWTH OF THE GERMAN NATION

The Germany of 1914. The Germany of to-day is a very different nation from the Germany that entered the World War in 1914. In order to understand this country as it is and as it is to be, we need to understand something of it as it was when, at the height of its power, it entered upon the great conflict. It will, therefore, be helpful for us to study its condition at that time and to learn some of the more important steps in its development. This will give us a better idea of the country than to study it simply as it is to-day, for present conditions are unusual.

A world power. When the war broke out, Germany had become one of the three great nations of the world. Great Britain and the United States were her keenest rivals. In commerce Great Britain alone surpassed her, and the United States was her only superior in industry (Fig. 214). Her navy was second only to that of Great Britain, and her army was regarded as the most powerful in the world. German industrial leaders were very progressive and the nation held high rank in education and science. If German political leaders had been content with progress by peaceful means rather than by military strength, the country's influence and leadership would undoubtedly have continued to increase. Her defeat in the World War meant the loss of power gained through many years of effort.

The German people and their government. For many centuries the Germans have been a civilized people. They belong to the Teutonic branch of the white race. The people are practically all of the same race and speak the same language. This helps to make a united people and a strong national spirit. As workers the Germans are slow, plodding, patient, skillful, and methodical, with a genius for organization.

The German Empire, 1871–1918, was a constitutional monarchy; the people had very little voice in the government. The king of Prussia was the hereditary monarch. The whole system was so planned as to give great power to the emperor and little power to the people. It was distinctly *autocratic* rather than democratic, though it had the form of a limited monarchy. Although we may disapprove of such a government, it was undoubtedly very efficient. Mere efficiency, however, does not make a good government. The people for years had been demanding a greater voice in the management of their affairs. At the

close of the World War the emperor fled into Holland and the people established a republic, with equal suffrage for men and women of all classes.

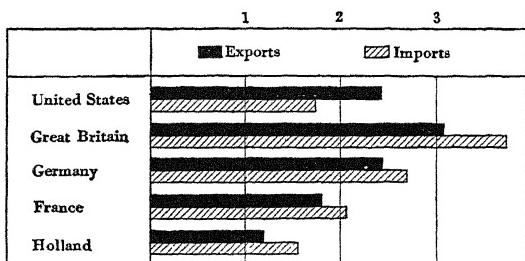
Germany in 1870.

Germany in 1870 was much like England a hundred years

Fig. 214.—Exports and imports of the leading commercial nations in billions of dollars just before the World War.

earlier. Most of the manufacturing was done in the homes. Nearly two-thirds of the people were engaged in agriculture. Germany at this time had few ships and no colonies, while Great Britain had possessions in many parts of the world and was carrying on an extensive foreign commerce. Industry and commerce previous to 1870 had developed much more slowly in Germany than in Great Britain, France, and the United States.

Why Germany had developed slowly before 1870. At the beginning of the nineteenth century there were more than three hundred small German states, very feebly united. At the time of Napoleon these were reduced to thirty-nine. Even then the union was weak, and there were many obstacles in the way of trade between the different parts of the country or with foreign countries. Each state had its own tariff, so that goods passing from one state to another often had to pay several duties. After a time the German people saw the folly of this; so they formed



what they called a customs union, which made the tariffs much smaller and made it possible for the states to export and import. This greatly encouraged the development of commerce.



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Fig. 215.—King William of Prussia being proclaimed Emperor of Germany in the Gallery of Mirrors, Palace of Versailles, Jan. 18, 1871, after the defeat of France. It was in this same palace that Germany signed the treaty of Versailles in 1918 after her defeat by the Allies.

Germany's rapid growth after 1870. Germany waged a successful war against France in 1870–1871 and Alsace-Lorraine became German territory. During this war the "New German Empire" was founded (Fig. 215). After the founding of the Empire the

people became more united, a strong central government was formed, and a strong national spirit was developed. This was fostered by a system of education designed to exalt the nation and to train the people to be skillful workers and good soldiers. Leaders were trained in the universities and other higher institutions of learning. These leaders were drawn almost exclusively from the wealthy or upper classes, and the class spirit was very strong. All children were obliged to attend school. Much attention was given to industrial training in the schools. The German rulers, in order to carry out their purposes, needed a body of reasonably intelligent working people, efficient, contented, and docile. The schools were designed to produce such citizens.

The study of science was greatly encouraged. Many scientific and industrial schools were organized, and many scientific men were trained. These scientists taught the people how to do their work scientifically, thus adding greatly to their power of production (Fig. 216).

In 1870 Germany was an agricultural country. In a single generation she changed to a highly organized industrial country. The population had greatly increased. With the increase of her industries there came a greater need of raw materials and markets for her manufactured goods. Great numbers of ships were built and her trade was enlarged. Germany, therefore, felt that if she were to continue her development she must gain control of territory, resources, and markets beyond the borders of the home land. When she began to look about for opportunities to colonize, she found the best parts of the world already taken by the nations that had made an earlier start. A fine field presented itself in South America, but the Monroe doctrine of the United States stood in her way. Africa seemed to offer the best opportunities, but only the hotter and drier parts remained. She obtained German Southwest Africa, German East Africa, Togoland, and Kamerun. None of these was fully suited to settlement by white people, but German East Africa was the most valuable. Some of the Pacific islands were also added to her possessions. Among these were the Bismarck Archipelago, a part of New Guinea, the Marshall and Caroline

Islands, and several other groups. She gained possession of Kiaochow in the province of Shantung, China. This gave her an important port and naval station in the Far East and added to her influence among the nations in the settlement of all questions concerning the Orient. While these colonies were extensive in area, they were not of great commercial importance, and Germany's trade with them was never great.



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Fig. 216. — A farm school for girls in Germany. This and many other industrial schools are supported by the government. Germany trains girls as well as boys of the middle class for practical farming. These girls are at work in the experimental field of the farm school.

When Germany found that her colonies gave her little opportunity for trade or colonization, she decided to increase her power by gaining a strong influence over the governments of weak countries with rich but undeveloped resources. Asia Minor and Mesopotamia offered the most favorable field for this kind of expansion. These regions were owned by Turkey. Germany loaned large sums of money to Turkey and cultivated her friend-

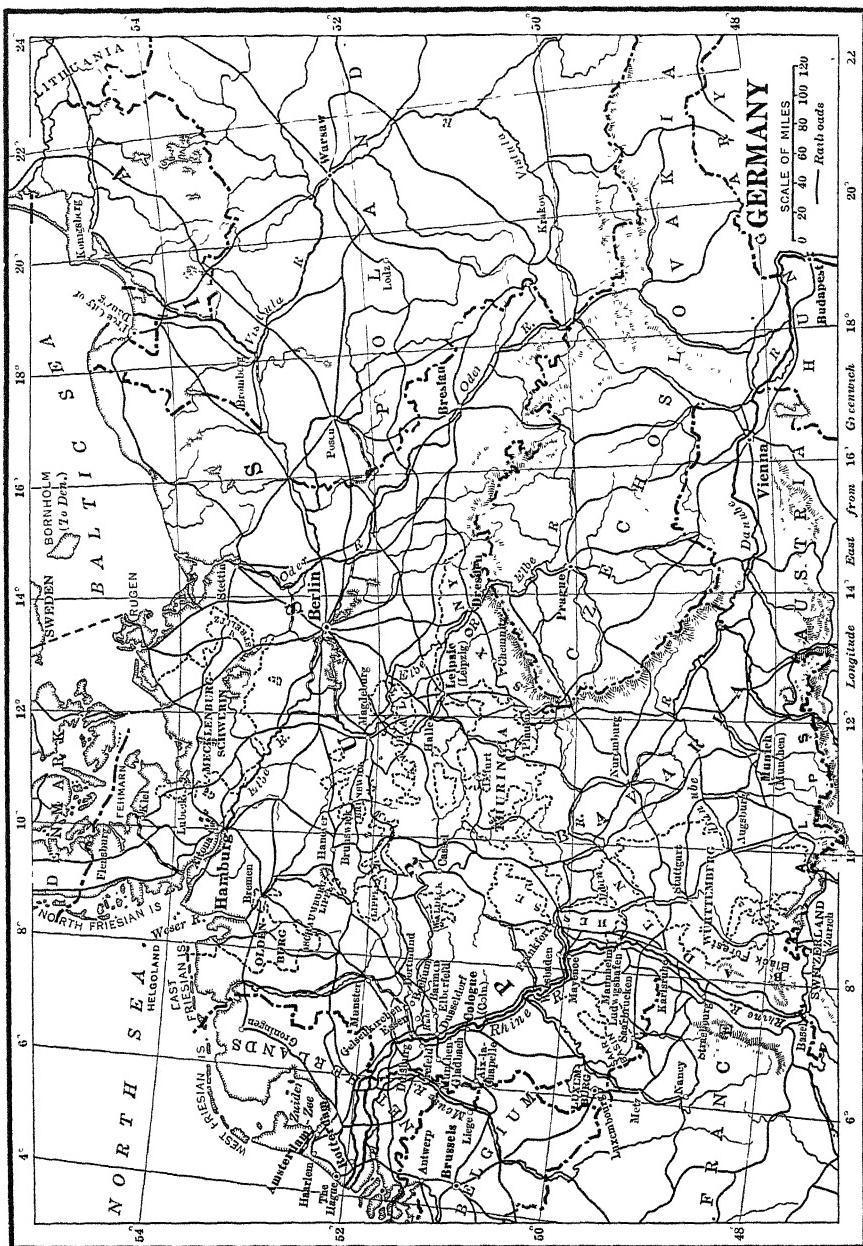


Fig. 217

ship in many ways. In return, Turkey granted her many special business privileges. This gave Germany influence and power in all matters relating to that region. Before the outbreak of the World War she was in practical control of the railroad from Berlin to Constantinople. She had started to build a railroad from Constantinople to Bagdad that would later connect with the Persian Gulf and thus make her a sharp rival of Great Britain and Russia.

Effects of the World War upon Germany. The World War left Germany a much weaker nation than she was at its outbreak. It will be well for us to learn what some of her most important losses were and what their results have been.

Loss of territory and resources. Alsace-Lorraine was given back to France. This was a territory about the size of Connecticut. To Poland, territory was ceded in eastern Germany that had been taken from old Poland about a hundred fifty years before. This territory was about three times the area of Alsace-Lorraine, and extended to the shores of the Baltic Sea. Danzig was made a free city and, with the surrounding territory, was given a government of its own under the protection of the League of Nations. Poland was given use of this Baltic port as an outlet for her trade with other nations. Memel, between East Prussia and Lithuania, was placed under control of Lithuania, but with right of Poland to use the harbor. To pay for the destruction of coal mines in northern France during the war, the rich coal mines of the Saar Basin were ceded to France. This territory lies just north of Lorraine. Small districts were ceded to Belgium. Luxembourg was released from the control of Germany. The people of northern Schleswig voted to unite with Denmark. A part of Upper Silesia was annexed to Poland. In all Germany lost about one-eighth of her European territory. In addition to the losses in Europe, Germany was obliged to give up all her colonies, which were placed under the control of different Allied nations.

Other losses. It cost Germany vast sums of money to carry on the war, and at its close she was required by treaty to pay a very heavy indemnity. Her merchant marine was surrendered

to pay for the great destruction of the Allies' ships by her submarines. Practically all of her navy was surrendered, and her military strength was greatly reduced. In 1923 France occupied the Ruhr Valley to compel payment of reparations when Germany failed to meet her treaty obligations. There was also much loss of population and resources as well as of lives and property.

Because of the cruel methods of warfare employed by Germany, and because most nations thought that her cause was unjust,

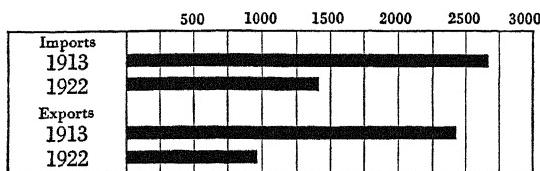


Fig. 218. — German imports and exports in millions of dollars for 1913 and 1922.
Account for the decrease in German trade.

Germany lost much of the good will that she had gained among the nations. This was one of her greatest losses. During the war she had not been able to carry on her foreign trade, as her ports had been blockaded and her ships had been seized. At the close of the war it was not easy for her to regain either lost trade or lost friendship.

QUESTIONS AND PROBLEMS

1. Why was Germany's industrial progress slow before 1870 and rapid after that?
2. Why was Germany not more successful in her attempts at colonization?
3. Why was Great Britain afraid of German rivalry in trade?
4. How did Germany come to have much influence in the Far East and in the Near East?
5. How did science aid the growth of the German nation?
6. How did Germany win so much trade from her rivals in the markets of the world?
7. What losses came to Germany as a result of the World War?
8. What is the present form of government in Germany? How does it differ from the one before the World War?
9. When did Germany change from an agricultural to a manufacturing country? Why was the change made?
10. Why did Germany build up a large merchant marine before 1914? What became of it?

11. Why did Germany lose the good will of so many nations? What lesson in this for other nations?
12. Why were the coal mines of the Saar Basin given to France?
13. Why was the size of Germany's army and navy reduced at the close of the World War?
14. Why was territory at the close of the war awarded to Poland? To France?

SUGGESTED PROJECTS AND EXERCISES

1. Construct a map of Germany showing the boundaries as they were before and at the close of the World War.
2. Construct a map to show Germany's colonial losses. Indicate the country now in control of each lost colony.
3. Make a list of the things that you think our country should learn from Germany. Include her mistakes as well as her successes.

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CHAPTER XXIII

THE DEVELOPMENT OF GERMAN RESOURCES

Extent of resources. While Germany's natural wealth is fairly large, it is not so great as that of several other nations. Great Britain, for instance, has many better harbors. Our own country is much richer in both coal and iron ore. We are also much better supplied with other important metals, such as copper, lead, zinc, gold, and silver. Many other lands are far superior to Germany in agricultural resources. Germany has to depend in large measure upon other regions for both food and raw materials. No other country, however, has been more scientific in the use of its resources. Her scientists have found out and have taught the people how to make the best use of what they have. This is the chief reason for her rapid progress.

AGRICULTURE

Science applied to agriculture. Before 1870 the most of her people were farmers, just as they were in Great Britain before the industrial revolution in that country. As the nation grew, the rulers and people alike did everything in their power to build up the great manufacturing industries. With all this attention given to manufacturing one might think that agriculture would be neglected. Such was not the case. Many people left the farms for the factories. Population increased and there was greater need of food. How could this be supplied by those who remained on the farms? The soil on the whole was rather poor. Much of it had been nearly worn out by many years of unscientific cropping. German chemists began to study the soils to find out how they could be improved. By this study they learned how to make chemical fertilizers by mixing potash from their mines,

waste slag from the blast furnaces, and nitrate from Chile. By using these fertilizers on his land the German farmer was able to raise much larger crops. Other countries have learned how to make and use such fertilizers, and thus the agriculture of the world has been greatly improved (Fig. 219). The German scientists also taught the farmer how to change his crops from



Courtesy American Agricultural Chemical Co.

Fig. 219.—The American farmer depends partly upon German potash for his fertilizers. Here is a field of potatoes at Presque Isle, Maine, grown on commercial fertilizer, the potash of which came from Germany.

year to year and how certain crops may be used to improve the soil. Agricultural schools were provided for the training of farmers. (Our own country is doing much in the same way for our farmers through the Department of Agriculture, experiment stations, and agricultural colleges.) In spite of all this scientific agriculture, however, the German farmer was not able to produce enough food to supply his country.

Physical divisions. If we could take a bird's-eye view of Germany, we should see a low plain bordering upon the Baltic Sea (Fig. 213). This is a part of the great lowland of northern and central Europe extending from The Netherlands at the west and expanding into the great Russian plain in the east. It is low and in many places sandy without great fertility. The soil is largely glacial in origin. To the south of this plain, in middle and southern Germany, we should see a somewhat rugged upland

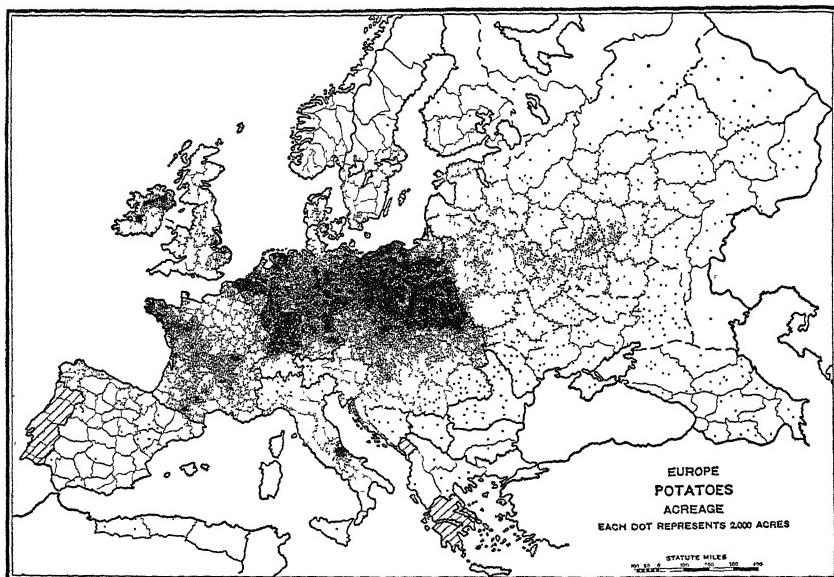


Fig. 220. — Potatoes are raised extensively throughout northern Europe, but nowhere is the crop so abundant as in Germany.

country with many valleys, hills, and some low mountains, many of which are partly forested. Far to the south the Alps extend their northern ranges into German territory. In all the upland country the valleys are generally fertile and furnish valuable farming lands. This is particularly true of the upper Rhine and its tributaries in the south. On these slopes are the valuable vineyards for which the Rhine country is noted. This is made possible by a system of terracing that prevents the washing away of soil.

Some important crops. The German farmer is careful to raise only those crops that are best adapted to his locality. Germany leads the world in the production of potatoes and sugar beets (Fig. 221). Other important crops are grains, grapes, hops, and tobacco.

Potatoes are extensively raised throughout the country (Fig. 220). The crop usually amounts to about twenty bushels per



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Fig. 221.—The sandy soil of northern Germany is well adapted to the raising of potatoes. In what ways do the German methods of marketing potatoes differ from ours? What fertilizer was probably used in raising this crop?

capita. In the United States it amounts to only four bushels. Only about one-fourth of the crop in Germany is used as food for man. Germans use potatoes in a great variety of ways. Large quantities are dried in factories and ground up into potato flour. This is used in many different kinds of food. Potatoes are also used freely as food for farm animals. A large part of the crop goes to make starch and alcohol. The alcohol is largely used as fuel, and is manufactured in numerous distilleries, which are generally located in the potato-growing districts.

The sugar beet. You will remember that it was in Germany that the sugar beet was so greatly improved by the process of scientific selection. This development of the sugar beet is another fine example of the way in which science is made to serve industry. This has been a great service to other temperate regions, many of which are now producing their own sugar instead of depending upon the tropical world. Beets are most

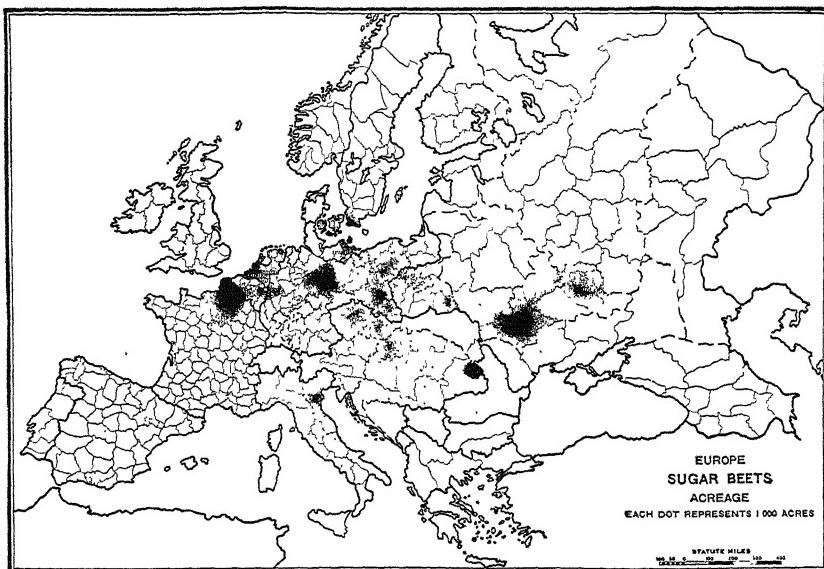


Fig. 222. — Where sugar beets are most abundantly grown.

extensively raised in central and eastern Germany (Fig. 222), though many are grown upon the great plain at the north (Fig. 223). They require a large amount of hand labor and are therefore well suited to countries having a dense population. This is one reason why they are so extensively grown in Germany. The soil and climate are also right for the growth of the crop. It has been found that beets, as well as potatoes, leave the soil in excellent condition for the grain crop that usually follows.

Grains. On the sandy portion of the northern plain large crops of rye and oats are raised. Germany is surpassed only by Russia in the production of rye. Wheat and barley require

somewhat better soil and are grown to better advantage farther south. The country produces about three times as much barley as wheat. "Black bread," made from rye flour, is more commonly used than white bread. Black bread is highly esteemed, especially among the peasants and industrial workers.



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Fig. 223. — A great beet field in Germany. Twenty-six tons to the acre are raised on this level land. From an acre of such beets about 7000 pounds of sugar are obtained.

Grapes. The upper Rhine Valley is especially adapted to the growth of grapes. The vineyards are located upon the southern slopes of the valley. They are thus protected from the cold north winds and are most exposed to the direct rays of the sun. Under these conditions crops of excellent grapes are grown. A journey up the Rhine would show us many of these beautiful vineyards, wonderfully terraced and carefully kept (Fig. 224). This region is the northern limit in Europe for raising grapes.

The animal industries. Cattle are raised in all parts of the country. Good pasture lands occur almost everywhere. The animals are raised both for beef and for dairy products. In our own country we have many Holstein cattle, which are large producers of milk. This breed comes from Holstein, a famous dairy section in northwestern Germany.

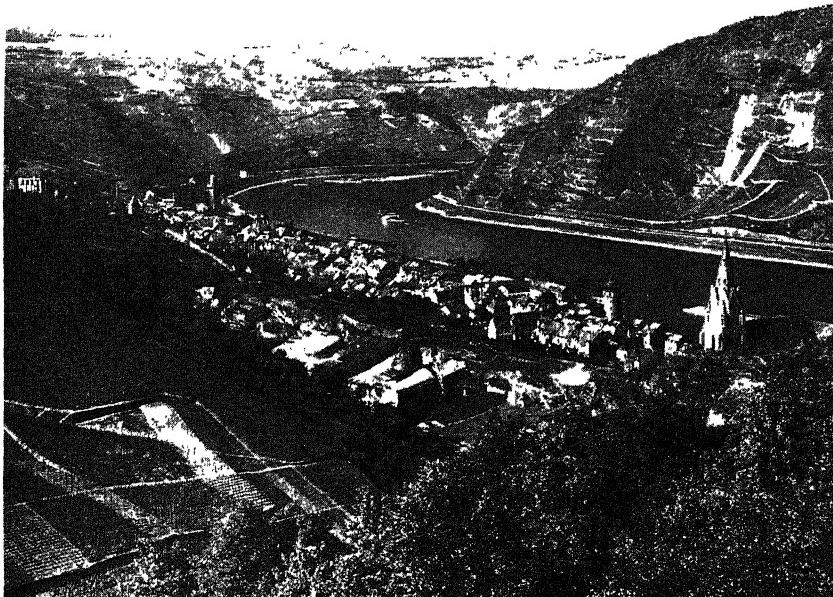


Photo from Ernest Peterffy.

Fig. 224. — A view of the Rhine near Oberwesel. The river has cut its deep valley in the high plain. On the steep slopes are many of the famous terraced vineyards of the Rhine Valley. Why are they terraced? Why is the town in the valley rather than up on the plain?

The leaves of beets and the ground-up pulp from which the sugar has been extracted furnish excellent food for cattle. This helps the cattle industry and adds to the profit of the beet crop. The pulp is also fed to swine, so that Germany now raises a large part of the pork that she uses. Bacon and hams of excellent flavor are produced in Westphalia, where the hogs are fattened on beech-nuts and acorns.

What may seem very strange to us is the fact that these thrifty people also raise fish for the supply of food. Many swamps have been converted into ponds, where carp and trout are raised in large numbers. Their fish receive as much care and attention as our farmers ordinarily give their flocks of poultry.

Another interesting occupation is the raising of song birds. Our finest canaries are imported from Germany. These are bred and trained to sing in the homes of working people among the Harz Mountains.

Forests. Germany's scientific care of her forests has been a fine object lesson to the other nations of the world. The land not suited to farming or pasturage is forested and the trees are cared for almost as carefully as the cultivated crops. About one quarter of the area is woodland and much lumber is supplied for home use.

These forests are scattered over the more sandy parts of the northern plain and the more rugged or mountainous parts of middle and southern Germany. The government has made many laws for their protection and owns and cares for many of these forests. Schools are established for the training of scientific foresters. The people are taught how to care for their woodland



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Fig. 225.—These birch trees are a part of a planted forest in Germany. Lanes are kept open through the forest to help prevent the spread of fires. Of what value are these forests to the people?

in the best possible way. Forests are kept free from litter and are carefully guarded against fires. An industrial country, with a large population like that of Germany, would quickly exhaust its timber resources if the forests were not properly cared for. With the conservation of the forests Germany produces a large part of the lumber that is needed, and exports many articles made of wood.

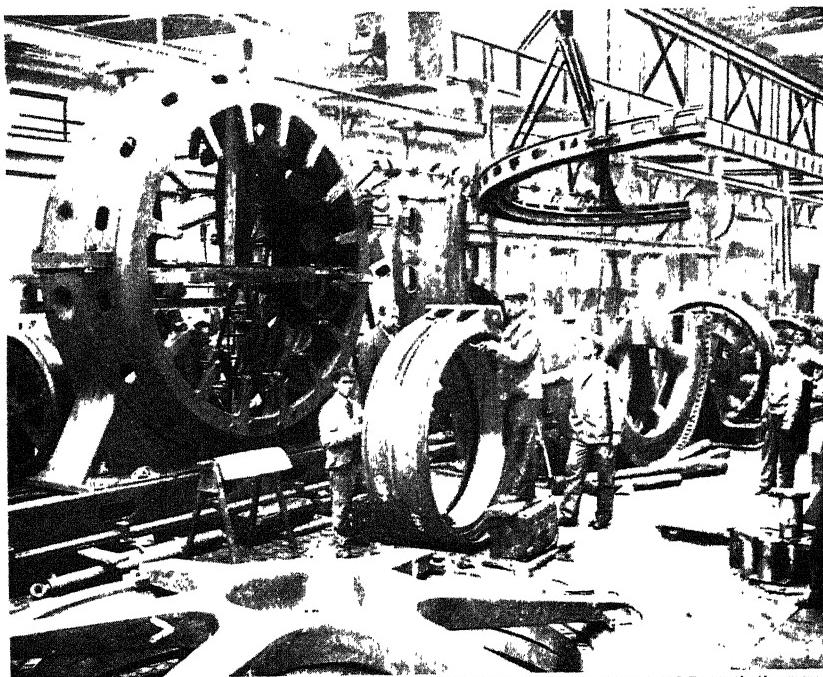
MANUFACTURING

Coal and iron ore. All manufacturing is dependent upon power. Without it modern industry is impossible. Steam is the power most generally used, and coal is the most widely distributed fuel. We have seen what an important part coal has played in the industrial and commercial growth of our own country and of Great Britain. It has played a similar part in the development of Germany. The supply of coal is ample for all her needs (Fig. 171). It is found in various parts of the country. The Ruhr Basin is by far the most important coal area. It is estimated that at the present rate of consumption there is coal enough in this area to last for several hundred years. It is in this basin that most of the great iron and steel works of Germany are located. The Ruhr River is a branch of the Rhine in Westphalia. Locate exactly this very important mining and industrial area.

Before the World War Germany obtained three-fourths of her iron ore from Alsace-Lorraine and Luxembourg (Fig. 213). Since losing control of these fields, she has been obliged to look elsewhere for her ores. Fortunately some ore is present in nearly all of her coal areas. Iron ore is also found in many other parts of the country, but nowhere in such quantities as were obtained in Alsace-Lorraine and Luxembourg.

The iron and steel industry. Germany's largest industry has been the manufacture of iron, steel, and metal goods (Fig. 226). Before the outbreak of the war in 1914 the Germans had greatly surpassed the British in this industry. This was largely due to the rich deposits of ore in Alsace-Lorraine, to the coal of the Ruhr Valley, to government aid, and to scientific methods in

industry. The United States alone produced larger quantities of iron and steel. The great center of the industry was in the Rhine and Ruhr valleys. This was due to the abundance of coal in the Ruhr district (Fig. 227), to its nearness to the iron ore of Alsace-Lorraine and Luxembourg, and to the navigable rivers of the



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

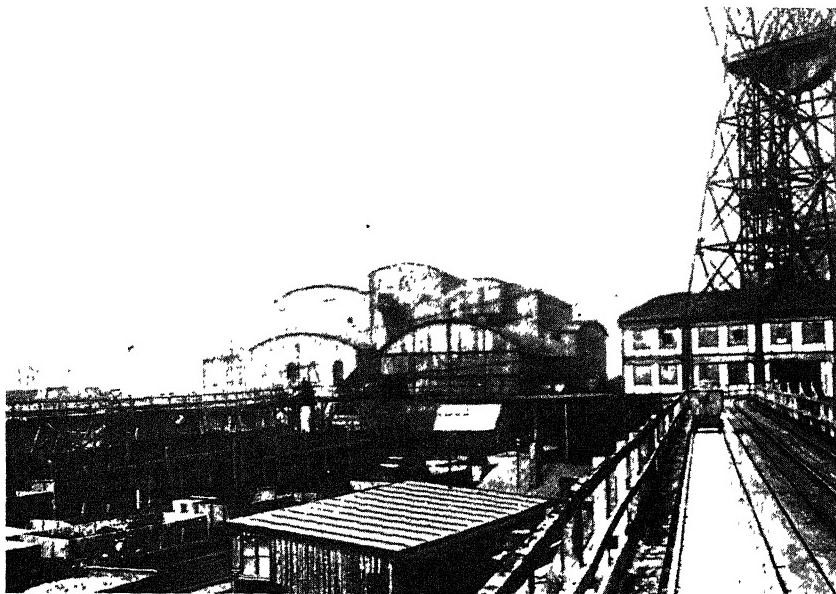
Fig. 226. — A German factory for the manufacture of electrical machinery.

area. Besides the German ore much was brought from Sweden and Spain through Rotterdam.

Düsseldorf in the Rhine Valley and Essen in the Ruhr are the leading iron and steel centers in this district. At Essen are the famous Krupp steel works where the great guns for the German navy and army were manufactured. Throughout the Rhine-Ruhr district there are many towns with busy mills turning out vast quantities of machinery of all kinds, steel tools, needles, cutlery of all sorts, steel rails, structural steel used in buildings,

ships, and bridges, together with many other kinds of iron and steel products. It is a region that would remind us somewhat of that about Birmingham in England and Pittsburgh in our country.

It was Germany's ability to manufacture these materials, so necessary in war, that made her such a powerful enemy at the time of the World War. It was in this district that many of the



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Fig. 227.—One of the many coal mines in the Ruhr Valley. Much of the coal produced at these mines is used in the immediate vicinity for running the great industrial plants of the Ruhr district. How has this been an advantage to both factories and mines?

German airplanes were built, as well as many other implements of war. Without the Rhine-Ruhr district Germany would have had much difficulty in waging the World War. Certainly she could never have developed as she did without this district.

There are other regions where the iron and steel business is important; and many other parts of Germany are engaged in some kind of metal industry, but nowhere so extensively as in the Rhine-Ruhr district. Since the war these industries have

been greatly depressed, but the region still remains the greatest industrial section of Germany.

Shipbuilding. The growth of Germany as a naval power and as a commercial nation has called for the use of many ships. The modern ship is built largely of steel. With her great ability to produce iron and steel it is not surprising that Germany should have built her own ships. In recent years she has established many important shipyards at various ports, such as Stettin, Hamburg, Kiel, and Bremen.

The textile industry. Spinning and weaving are next in importance to the manufacture of iron and steel. Cotton, wool, linen, hemp, and silk are all extensively used in the German factories. Germany buys more of our raw cotton than any other country except Great Britain.

The Rhine district and Westphalia are the most important manufacturing centers, since they are near the Ruhr coal fields and the rivers furnish good means of transportation. Crefeld, Düsseldorf, and Barmen-Elberfeld are the larger centers. Important woolen centers are in Silesia and Saxony near the wool-growing district, but most of the foreign wools are manufactured in the Rhine-Ruhr district. Why should this be?

Chemical industry. The American manufacturer of cloth, leather, paper, and many other articles needs dyes of various kinds. When the German ports were blockaded in 1914, our manufacturers suddenly found themselves without the needed dyes. This was because our country, as well as others, had come to depend almost entirely upon Germany for these materials. German chemists had learned how to produce so-called *aniline* dyes of fine quality in great variety and abundance and at a low cost from coal tar. This tar was formerly a waste product in the manufacture of gas and coke. When the American manufacturer found that he could no longer obtain his dyes from Germany, our own chemists began to study the process of making them. They have in large measure succeeded, and our country is now much less dependent upon Germany for its dyes than formerly.

As a result of chemical study by German chemists several new food products have been put upon the market. From the oil of

coconuts and cottonseed several good substitutes for butter and lard have been made, which add materially to the food supply of the world. Artificial camphor, acids, fertilizers, drugs, perfumes, and many other chemical goods are turned out in large quantities as a result of the scientific work of German chemists.

The annual value of the chemical industry is greater than that of all machinery manufactured in the country. Germany's high



Courtesy German Kali Works.

Fig. 228. — These men are drilling a hole for a blast in a potash mine. The blast shatters the mineral, which is later refined and shipped to many countries for the manufacture of fertilizers. Germany furnishes most of the world's potash.

rank in this industry has been due both to her excellent technical schools and to the abundance of certain important mineral substances such as salt, potash, sulphur, and limestone. The center of the industry is in the upper Rhine Valley between Mannheim and Frankfort. Many works are near the rich potash mines of Stassfurt (Fig. 228). These are the richest in the world, while those of Alsace-Lorraine rank second.

Home industries. The peasants and village people of middle and southern Germany depend largely upon their farm products for a living. Most of them, however, have some form of home industry that they follow during their spare hours. Toy making is the most common of these industries (Fig. 229). The long winter season furnishes many spare hours for this work. Father, mother, and children engage in it, each having his particular part to do. For generations German people have been engaged in toy making. Much skill of hand has thus been acquired.

In many homes other articles than toys are made. Some artisans give their whole time to the making of cuckoo clocks with beautiful wood carving. Some make carpet beaters, boxes, barrels, baskets, violins, and many other wooden articles. By the manufacture of these small articles, which require much labor and but little raw material, the forests are used to the best advantage. Other families make a specialty of needle work.



© Brown Bros.

Fig. 229.—Making toys in German homes. This family is making poodle dogs from pressed cardboard. The children spend much of their time working on these toys. The products of these homes are found in practically all parts of the world.

TRANSPORTATION

Railroads, canals, and rivers. In Germany the industrial centers, unlike those of Great Britain, are far inland, and goods to be shipped out of the country have to be sent long distances to the harbors. This, of course, makes a good system of inland transportation a necessity.



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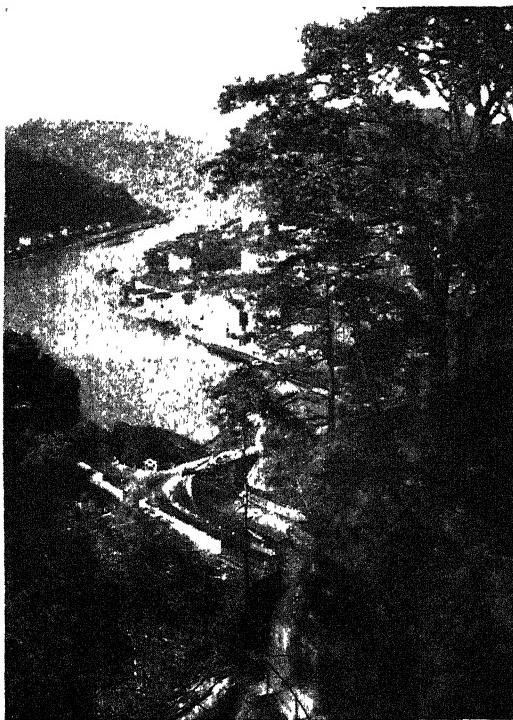
Fig. 230. — The important harbor of Kiel at the eastern terminal of the Kiel Canal. Ships are receiving or discharging cargoes at the docks, and the railroads are bringing freight or taking it away. This illustrates the cooperation of canals and railroads in Germany.

To meet this need, Germany is fortunate in having a group of navigable rivers, which have been easily connected by numerous canals, and also an excellent railroad system. The railroads and canals are not run as rivals but as parts of a well-planned national system of transportation (Fig. 230). Berlin is the most important railroad center. From here lines radiate in all directions to connect with the great trade routes of Europe.

No other country has a finer system of waterways than Germany. If you look at your map, you will notice that four long rivers cross the country from south to north, the Rhine, the Weser, the Elbe, and the Oder. These rivers flow for a long distance over the low plain of northern Germany and are navigable for many miles inland (Fig. 213). The country has between five and six thousand miles of navigable waterways. In addition to this an excellent system of canals connects these rivers and is extended so as to join them with the Vistula, Danube, Rhine, and Seine. The Kiel Canal connects the Baltic with the North Sea. In all there are about 1500 miles of these canals in Germany. They not only help in the domestic commerce, but give easy connections with the harbors for foreign trade.

The Rhine alone is so important as a commercial highway that many million dollars have been spent upon it to make it navigable for large steamers. It is said that more than 10,000 vessels are engaged in trade upon its waters.

By the terms of the treaty of Versailles parts of the Rhine, the Elbe, and the Oder were *internationalized*. By this we mean



Courtesy National City Bank, N. Y.

Fig. 231.—A view of the beautiful Elbe Valley near the point where the river enters German territory. The river has cut its way through the mountains and is navigable far into Czechoslovakia from this point.

that vessels of all nations have equal rights to sail upon their waters. The purpose of this is to give the inland countries access to the sea.

It is now possible for goods to go by inland waters all the way from Germany to the Black Sea. On Fig. 213 trace such a journey as this. Of course, navigation upon the rivers and canals is interrupted by the freezing weather of winter. This is especially true for the rivers of eastern Germany. Railroads must then do most of the work.

Harbors. The harbors on the Baltic are generally frozen for a part of the winter, but those in the North Sea are usually open. Near the mouth of each of the four great German rivers is an important seaport. Rotterdam, in Holland, is at the mouth of the Rhine and is the great trade center for all the Rhineland.



© Ewing Galloway.

Fig. 232. — This is a scene in the busy harbor of Hamburg. The port is the largest on the continent of Europe and is equipped with all kinds of conveniences for handling cargoes. Why is the port so important to Germany? Why are there so many kinds of boats?

Hamburg, near the mouth of the Elbe, is the busiest port on the continent. It is situated far inland at the head of the estuary of the Elbe. Many great steamers run from this port to different parts of the world. Much of Germany's foreign trade is therefore centered here (Fig. 232). Bremen, near the mouth of the Weser, is the second port of Germany. These cities have many large docks with all modern conveniences for loading and unloading the many great vessels that visit the ports. Stettin, near the mouth of the Oder, is the natural trade outlet for all the basin of that great river. It is one of the most important shipbuilding centers.

COMMERCE

The Germans, like the British, are obliged to look to other lands for many of their necessities. Many raw materials are needed for the factories. These make the largest group of imports. Raw cotton, wool, silk, hides, furs, iron ore, and copper are among the leading articles imported (Fig. 233). While some of these, such as iron ore, copper, wool, and hides, are produced in rather large quantities in the country, they are not sufficient to meet the home demands. The German farmer, in spite of all the progress that has been made in agriculture, is still unable to produce all the needed food. Foodstuffs are therefore the second important group of imports. Barley, wheat, rye,

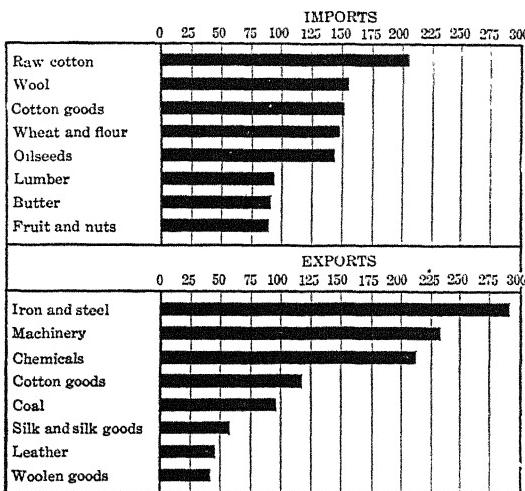


Fig. 233.—German imports and exports by article, in millions of dollars in 1925.

coffee, butter, eggs, and lard, together with many other food materials, are brought into the country in large quantities.

Germany usually imports more goods from the United States than from any other country. Nearly all the raw cotton and most of the copper come from this country. Breadstuffs, lard, petroleum and tobacco are also supplied in large quantities from here. Wool is brought from Argentina, Australia, and New Zealand; silk from Japan, China, Italy, and France. Spain and Sweden furnish most of the foreign iron ore. Furs come from the great northern forests of America, Europe, and Asia. Russia furnishes the largest share. Hides and skins are gathered from all parts of the world but are obtained largely from Russia, India, Argentina, Australia, and New Zealand. Large quantities of wheat are imported from Russia, the new nations of Europe, and the Americas. Coffee comes mainly from Brazil, while Denmark and Holland furnish most of the imported dairy products. Germany, therefore, like other densely populated industrial countries, finds it necessary to draw extensively upon many different regions for the supply of her needs.

German exports are mainly her manufactured articles (Fig. 233). But little food and few raw materials are sent abroad. Among the more important exports are machinery of many kinds, iron and steel products, potash, coal, furs, sugar, dyes, and manufactures of cotton, wool, silk, and paper. These and many other articles are sent to all the leading countries of the world. Great Britain has been the best market for German goods. Russia, the new countries of Europe, and our own country are also large buyers of German goods.

In 1913 the total value of imports amounted to \$2,674,000,000, and the exports to \$2,478,000,000, making a total trade amounting to \$5,152,000,000. Find out if you can how Germany ranks among other nations in the value of its exports and imports at the present time.

QUESTIONS AND PROBLEMS

1. How have German scientists aided the development of agriculture in Germany and in the world?
2. Why do the Germans cultivate their lands more intensively than we do?

3. What can our country learn from Germany about the care of our forests?
4. Why was the Ruhr Valley of great importance to Germany in the World War?
5. At the outbreak of the World War Germany had surpassed Great Britain in the production of iron and steel. How do you account for this?
6. The Rhine is Germany's most important river. Account for this.
7. Why had Germany in 1913 become one of the largest shipbuilding nations in the world?
8. Compare Germany with the United States in relation to: (1) coal; (2) iron ore; (3) agriculture; (4) variety of climate; and (5) navigable rivers.
9. How has the loss of Alsace-Lorraine affected Germany as an industrial country?
10. How have other nations come to depend upon Germany for dyes? How has the war affected this industry?
11. Why are the potash deposits of Germany very important to the world?
12. Why are hillsides terraced for vineyards in Germany and not in the United States?
13. How have the rivers and canals of Germany aided commerce and industry?
14. Which of Germany's ports are closed for a part of the time in winter?
15. Why is the Kiel Canal very important to Germany?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of Germany indicate in color the natural regions of the country.
2. Make a collection of materials that the Germans use in making artificial fertilizers. Mount on a chart and print under each the name of the plant food that each furnishes.
3. Trace a cargo of goods by canal and river from the Baltic to the Black Sea. Use blue pencil on an outline map of Europe. Print the names of the rivers. Locate the cities through which the cargo would pass.
4. Indicate by lines of different colors on an outline map of the world the routes of the following imports: cotton, silk, wool, iron ore, petroleum.
5. On an outline map of Germany draw the important rivers. Locate the chief commercial cities. Print the names of rivers. If possible locate the head of navigation of each.

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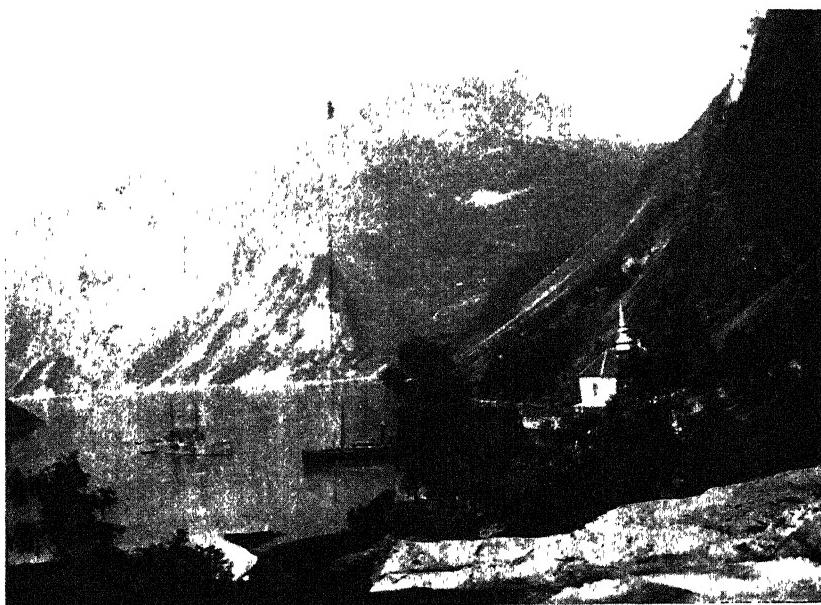
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CHAPTER XXIV

NORWAY, SWEDEN, DENMARK, HOLLAND, AND BELGIUM

NORWAY AND SWEDEN

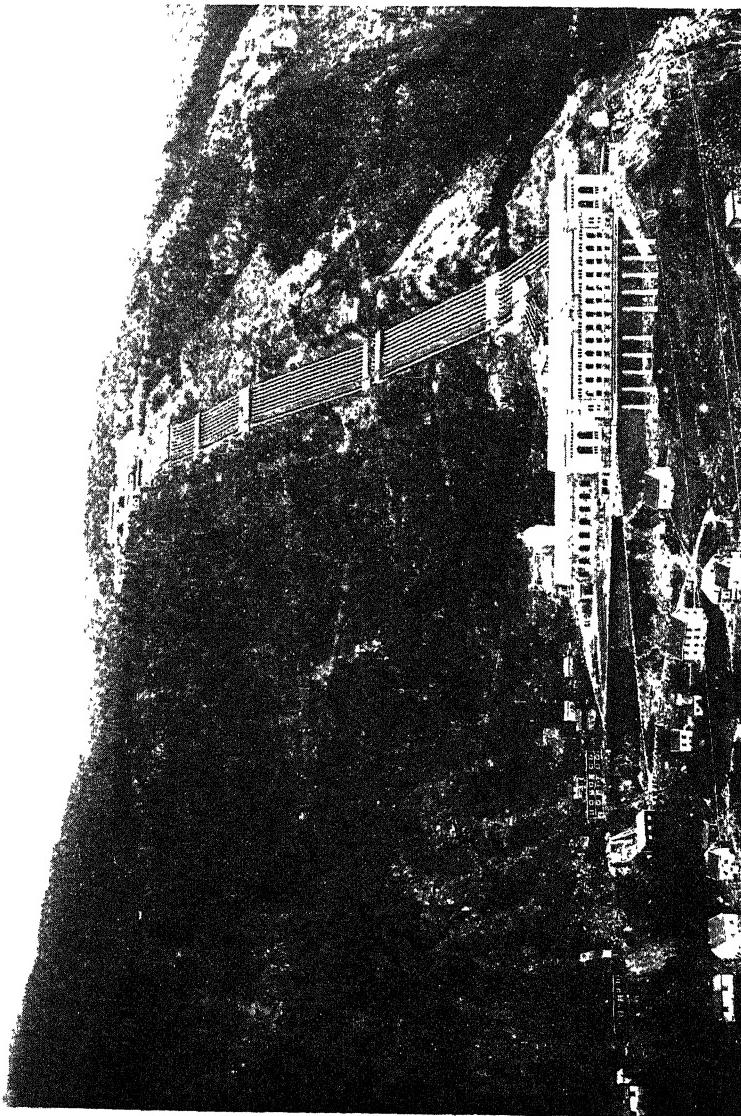
NORWAY and Sweden occupy the Scandinavian Peninsula in northwestern Europe. This peninsula is often spoken of as



© Ernest Peterffy.

Fig. 234. — One of the beautiful fiords that penetrate the coast of Norway. The deep waters have made it possible for visiting steamers with many tourists to come far up the fiords and find safe anchorage. The little church suggests that people live in the vicinity, but the sides of the fiord are so steep that there are few places where farms or villages are possible.

Scandinavia. It is one of the most interesting sections to visit in all of Europe. Thousands of tourists find great pleasure every season in traveling through this beautiful country or in sailing



Courtesy National City B.W.R., N.Y.

Fig. 235.—Where electricity is produced by water power. Pipe lines convey the water to the plant at the foot of the mountains, where it turns great dynamos, thus producing the electric current. Norway and Sweden have many such hydro-electric plants with which they light their towns, run mills, smelt iron ore, and manufacture nitrate fertilizers from the air. They even sell electricity to Denmark, transmitting it under the sea by cables.

along its picturesque coast. If we were to travel from the extreme south to the extreme north, our journey would be about as long as from the southern tip of Florida to the City of New York.

Character of the country. Norway, which occupies the western side of the peninsula, is very mountainous throughout its length. These mountains are steep on the Atlantic side and at many points are penetrated by deep, narrow inlets of the sea known as *fjords* (Fig. 234). Some of these are a hundred miles or more in length. They are old mountain canyons into which the sea has entered, for the coast of Norway is a sunken shore line. Ancient glaciers have helped to make these deep canyons. Ships of large size can go far inland through these bodies of perfectly protected waters and find the safest kind of anchorage at the head of the fjords. Rivers pour their waters down the western slopes of the mountains and furnish excellent water power (Fig. 235). On the Swedish side of the peninsula the slopes are gentler toward the east. Most of the land in Norway is barren, rugged, and unfit for agriculture. About one-fifth of it is forested. Thousands of islands, great and small, are scattered along the coast, giving a most picturesque effect to the whole coast line. Many of these islands are the homes of hardy fishermen. The Lofoten group, far to the north, is the largest and most important.

Land of the midnight sun. Part of the peninsula lies far to the north of the Arctic Circle. If we were to visit this section in summer, we should find that for several weeks the sun would not set at all. Since the sun is visible throughout the night, the country is often called the "land of the midnight sun." As if to pay for these long sunny days of summer, there are an equal number of days in winter when the sun cannot be seen at all above the horizon. These long winter nights, however, are not all darkness, for the sun comes so near to the horizon that a part of the time is beautiful twilight. In the southern part of the peninsula the midsummer nights are only about six hours long, and much of this time is morning and evening twilight. The growing crops of this section, therefore, as in northern Canada, have long hours of sunlight, and are able to grow rapidly through

a season that is naturally short. Crops can be grown farther north than would be possible were it not for these long, sunny days of summer.

Climate. We should naturally expect to find this great peninsula as cold as Greenland, for it is in about the same latitude. As a matter of fact, Scandinavia is much warmer. The North Atlantic Drift brings warm waters from the far south to the western coast of the peninsula. The prevailing westerly winds bring the warm, moist air from the ocean to the land. This



Courtesy National City Bank, N. Y.

Fig. 236. — A fleet of small fishing boats in one of the many small ports of Norway. Such a rugged country is not suited to agriculture, but good fishing grounds and fine ports make Norway's fishing industry very large.

makes the climate much warmer than it otherwise would be and at the same time gives a good rainfall, which is important both to the forests and to agriculture in the warmer sections. Sweden, being farther from the coast, receives less benefit from these winds than Norway and is, therefore, somewhat colder. The ports of Norway, even in the far north, are open all winter, while those of Greenland and even the Baltic Sea are tightly frozen. Both Norway and Sweden, however, have long, cold winters in spite of the tempering influence of the warm ocean winds.

Forests. Lumber is one of Scandinavia's most important products. The extensive forests of pine, spruce, and fir upon the rugged uplands are among the most valuable possessions. These forests have made Norway and Sweden two of the important lumber-exporting countries of the world. Sweden is more extensively engaged in lumbering than Norway.

Iron ore. In Sweden iron ore is abundant and of excellent quality. It is interesting to know that more than half of this ore lies beyond the Arctic Circle. Charcoal is commonly used in smelting, as coal is scarce and forests are abundant. Some smelting is now done by the electric furnace. The charcoal-smelted iron is of fine quality and is much sought by machinists, blacksmiths, and manufacturers of high-grade steel goods such as cutlery, needles, and firearms. Germany, Great Britain, and even the United States buy large quantities of the Swedish ore for their own blast furnaces.

Fisheries. The Norwegian waters abound in fish. With a rocky shore line, many excellent harbors, poor farming lands, and a cool climate we are not surprised to find the fishing industry highly developed among the Norwegians (Fig. 236). No nation depends more upon this industry than Norway. Cod and herring are caught in great numbers and sent to many parts of the world. Cod are taken mainly on the Lofoten banks at



Courtesy Norwegian Government Railways Travel Bureau.

Fig. 237.—A Norwegian whaling vessel, showing the gun used in shooting whales. The gun is used for throwing either bombs or harpoons. This is the modern method of taking whales.

the north and herring in the numerous bays along the coast and about Bergen at the south. Whales and fur-bearing animals are hunted in the Arctic regions, but most of the whale hunting is now done in the South Atlantic (Fig. 237). About one-third of Norway's exports are fish or fish products. Fishing is not so important in Sweden as in Norway, but many herring are taken in the Baltic Sea.

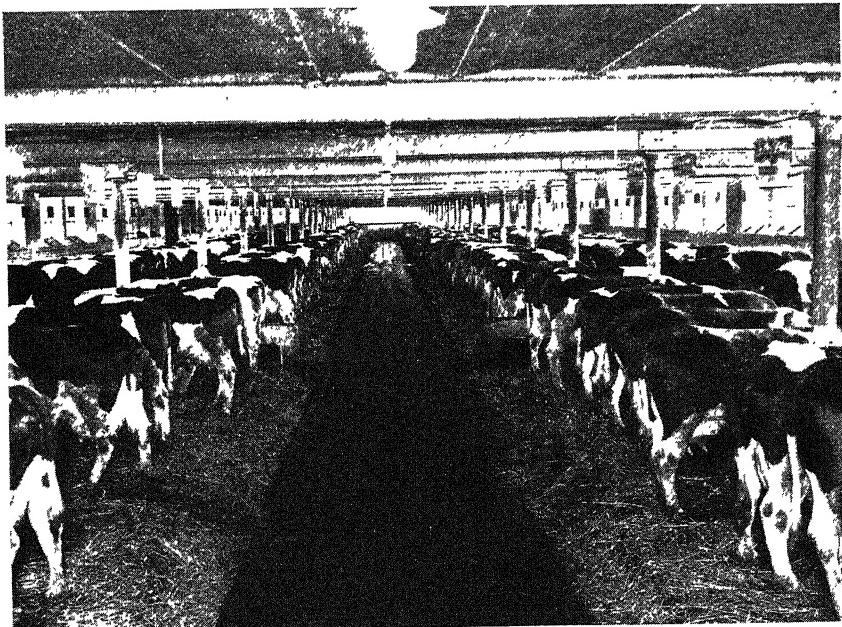
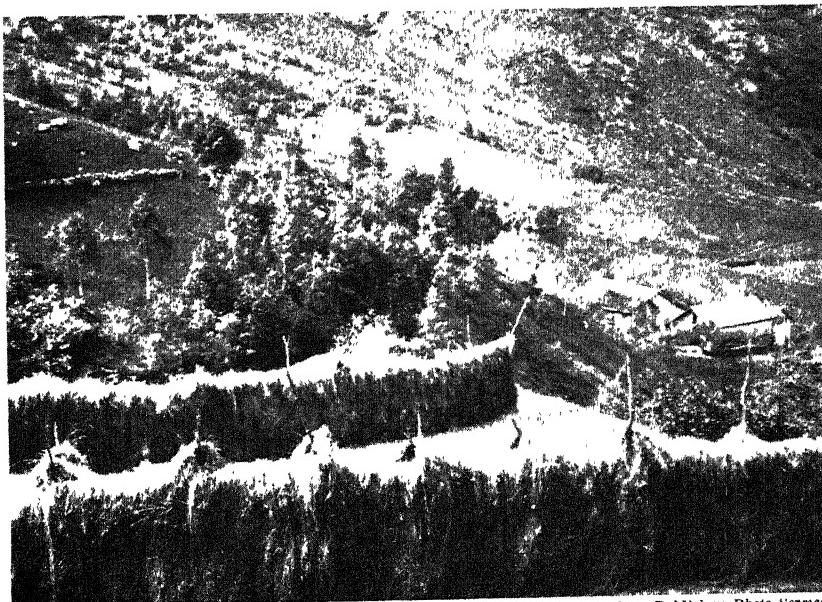


Fig. 238. — Southern Sweden is extensively engaged in dairying. These are some of the fine cattle that produce the milk. The cattle are kept healthy and the milk is kept clean.

Agriculture. A considerable portion of southern Sweden is well suited to agriculture, but Scandinavia as a whole is a poor agricultural region. In the south the hardier grains, rye, oats, and barley, do well, while potatoes and sugar beets are important crops. Fine herds of cattle are raised here and dairying is an important and growing industry (Fig. 238). In Norway the cattle and goats are sent away in summer to pastures far up among the mountains. Caretakers must go with them and remain in these

lonely dairy camps throughout the season (Fig. 240). Many of the dairy products are sent into the European markets, especially to Great Britain. In Norway, on account of its mountainous character, there is but little land suited to agriculture (Fig. 239). Many Norwegian and Swedish farmers have come to this country to find easier conditions of life, and have greatly prospered upon the large farms of our North Central states.



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Fig. 239.—A typical farming area at the head of a deep fiord. The soil has been washed down from the mountainside and spread out upon the lower parts of the valley. Every part of this area is cultivated. There is so much rain and the ground is so wet that hay is dried upon racks, as shown in the picture.

Manufacturing. The most important articles manufactured are lumber, pulp, paper, furniture, and other wood products. Abundant water power makes the use of much coal unnecessary (Fig. 235). Sweden makes a specialty of manufacturing matches.

Commerce and shipping. Sweden exports lumber, pulp, wood products, iron ore, and dairy products; Norway exports fish and lumber. The imports for each country are largely food-

stuffs, coal, and manufactured articles. These goods are carried mainly in Scandinavian vessels. Shipbuilding is one of Norway's important industries. She has a larger number of vessels than any other nation of equal population. Norwegian vessels and sailors are seen in every important port. They are busy carrying the goods of other countries in addition to their



Photo from Ernest Peterffy.

Fig. 240.—A summer pasture for goats in the Norwegian mountains. In the background is a summer dairy camp. Goats can live where the country is too rugged for cows to obtain their food.

own. Oslo, the capital of Norway (formerly called Christiania), is its principal port. Bergen is a great fish market (Fig. 241), and Trondhjem is an important trade center. The principal Swedish ports are Goteborg on the western side, a port which is ice-free, and Stockholm on the Baltic.

An influential region. For centuries the Scandinavians have been accustomed to a seafaring life. Their Viking forefathers had their sheltered homes in the fiords of Norway. From these se-

cluded ports these bold warriors sailed forth in their famous boats to become a terror to the people of western Europe. Scandinavian sailors of to-day are among the best in the world. These people have played an important part in the exploration of the world. They were among the earliest explorers of our own country. In recent years Nansen, a Norwegian, almost reached the



Courtesy Norwegian Government Railways Travel Bureau.

Fig. 241.—The city of Bergen and its finely protected harbor. This is Norway's most important fishing port.

North pole, and in 1911 Amundsen, another Norwegian, discovered the South pole. Recently (1926) Amundsen, Ellsworth, and Byrd have reached the North Pole by means of flying machines. Using northern Spitzbergen as a starting point one can fly to the pole and back in about sixteen hours. The Scandinavians value education very highly and many of their people have become noted scientists and writers. Many beautiful legends of "Norseland" have come to us from these countries. We can understand how such a land could produce such legends.

DENMARK

Importance of location. The kingdom of Denmark occupies the northern part of the peninsula of Jutland and several large islands on its eastern coast. Copenhagen, the capital and the largest city, is built upon the largest island, which is separated from Sweden by a narrow strip of water. All the Baltic commerce, except that which goes by the Kiel Canal, must pass through this strait, thus giving Copenhagen a very important commercial and strategic position.

Copenhagen has the only harbor in Denmark deep enough for the largest ocean-going vessels. It is, therefore, easy to see why this city has become the largest in the country. It is the natural distributing center for the Baltic ports.

A dairy-farming country. About four-fifths of this low, flat country is farm land, and the people have learned how to cultivate the soil in such a way as to get the largest possible income from it. The Danes have become experts in dairying. When other nations wish to learn the best methods of dairying, they are likely to send their experts to Denmark to study the methods employed. Milk, butter, and cheese are produced under strict sanitary regulations. Cows are inspected every month to detect the presence of any disease. By this practice the Danes have entirely stamped out the dread disease of tuberculosis among their cattle.

As a result of butter making there is much skim milk. This makes an excellent food for swine. Great numbers of these animals are therefore raised, and Danish bacon has come to be almost as famous as Danish butter (Fig. 242).

Commerce. The trade of Denmark is large for so small a country. Its dense population must look to other nations for the supply of many of its needs. The imports are naturally greater than the exports. Feed for cattle, breadstuffs, lumber, coal, textiles, and other manufactures are brought into the country in relatively large quantities. The greatest export is butter, made in coöperative creameries. More than \$50,000,000 worth is annually sent to Great Britain alone. Much is sent into the

tropics in tin cans. Bacon, eggs, meat, and live stock are also important articles of export.

Foreign possessions. Denmark owns Greenland and the Faroe Islands. Greenland is unimportant as a commercial country. The Faroe Islands supply fish, wool, and mutton.

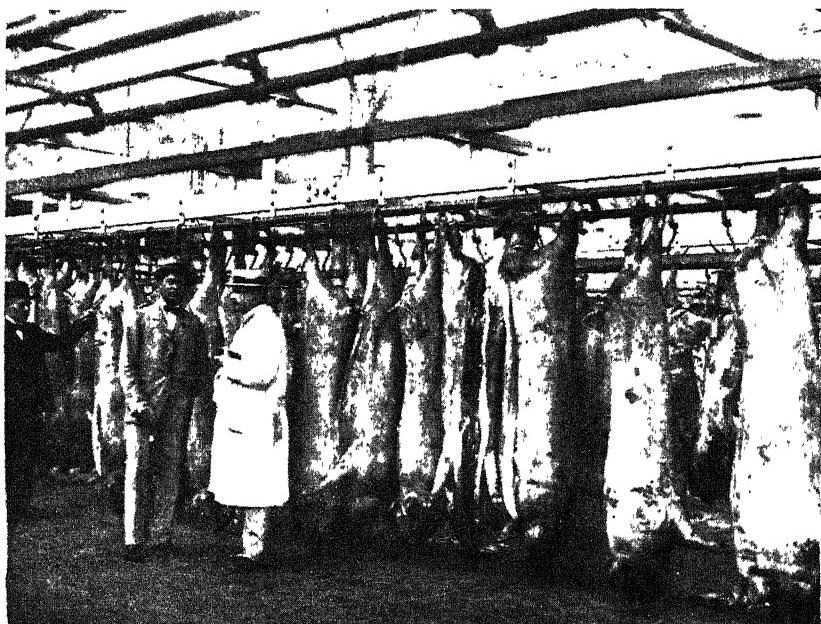


Fig. 242. — Slaughtered Danish pigs ready for export. Next to the United States, Denmark is the largest exporter of meat products in the world. No English breakfast table is complete without its Danish bacon.

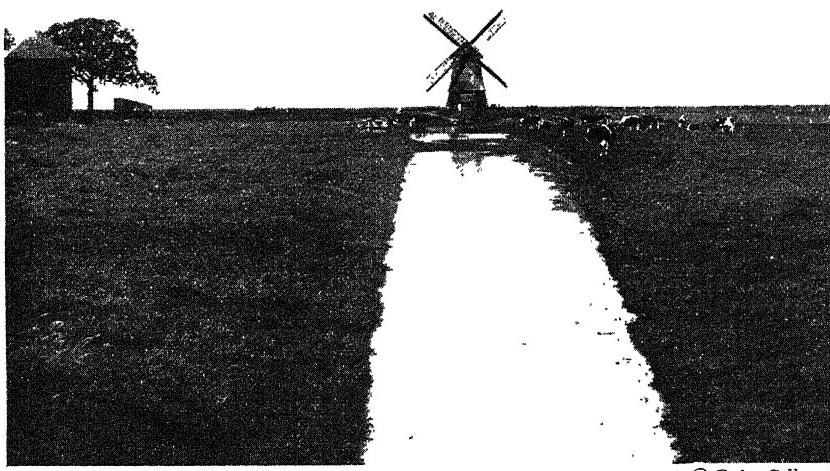
Iceland was formerly owned by Denmark, but was granted independence in 1919.

THE NETHERLANDS

The Netherland country. If we were to visit The Netherlands, or Holland, as the country is quite generally called, probably the first things to impress us would be the windmills, the canals, and the low, flat country itself (Fig. 243). Let us see why the country is low and flat, and why there are many canals and

windmills. A large part of the country is the delta of the Rhine, and deltas are always low and flat. Much of the country is so low that it was of little value to man until it was protected from the sea and the floods of swollen rivers.

Dikes and canals. The Dutch people, through many long years of hard labor, have built great dikes and sea walls to fur-



© Ewing Galloway.

Fig. 243. — A characteristic scene in Holland. Where does the water in the canal come from and what becomes of it? How is the country well suited to dairying? How is it suited to agriculture?

nish the needed protection. The land is now drained by many canals. Much of it is actually below sea level or so low that water will not drain off. Such places have been surrounded by dikes or embankments. From these surrounded areas great windmills are constantly pumping the water out into the higher canals in order that the lands may be kept dry enough for farm-

ing. At such great cost of labor, time, and money, a good portion of this little country has been reclaimed from the sea. Today it is very valuable farming land as its soil is fertile, fine, and moist. These hardy people are now planning to reclaim a large portion of the Zuider Zee, a shallow arm of the sea in the north-western part of The Netherlands. Holland is in a high state of cultivation. It is not strange that land won at such high cost should be most carefully cultivated.

We are not surprised that the Dutch people have always been ready to fight vigorously in the defense of their little country. Sometimes, when the land has been invaded, the dikes have been opened and the land flooded as a means of national defense. Can you find out when this was actually done? The canals are not only useful for drainage, but the larger ones are excellent highways for boats and thus are an aid to commerce. In winter they give opportunity for much fine skating.

Resources of the country. Iron ore, lumber, and water power are wanting and there is but little coal, therefore relatively little manufacturing. Fertile lands and the near-by sea are the two greatest resources of this little country. Both are extensively used by the Dutch people, the land for agriculture and the sea for trade and fishing.

Dairy farming. On the reclaimed lands there is a rich growth of fine grass, giving pasturage to great numbers of dairy cattle. Cows are everywhere and are almost as conspicuous as the canals and windmills (Fig. 243). These animals are given the best of care and produce great quantities of milk. Holland is especially noted for its excellent cheese. Many different kinds are produced. We have all heard of Edam cheese, which takes its name from the town of Edam just west of the Zuider Zee. The cheeses find their largest market in England, but are also sent to our own country and to many other parts of the world.

Other farming. Much of the land is devoted to agriculture. Rye, oats, barley, wheat, potatoes, and sugar beets are grown. Much attention is given to the raising of vegetables for the market. Great numbers of cabbages and other vegetables are sent to England. Our finest cabbage and cauliflower seed come

from Holland. The Dutch make a specialty of raising bulbs of many kinds, which are sold in all parts of the world (Fig. 244). Our own beautiful beds of hyacinths, crocuses, and tulips come mainly from Dutch bulbs. Rich as the soil of Holland is, the Dutch cannot produce food enough for themselves and their cattle. They must look to neighboring nations for a good

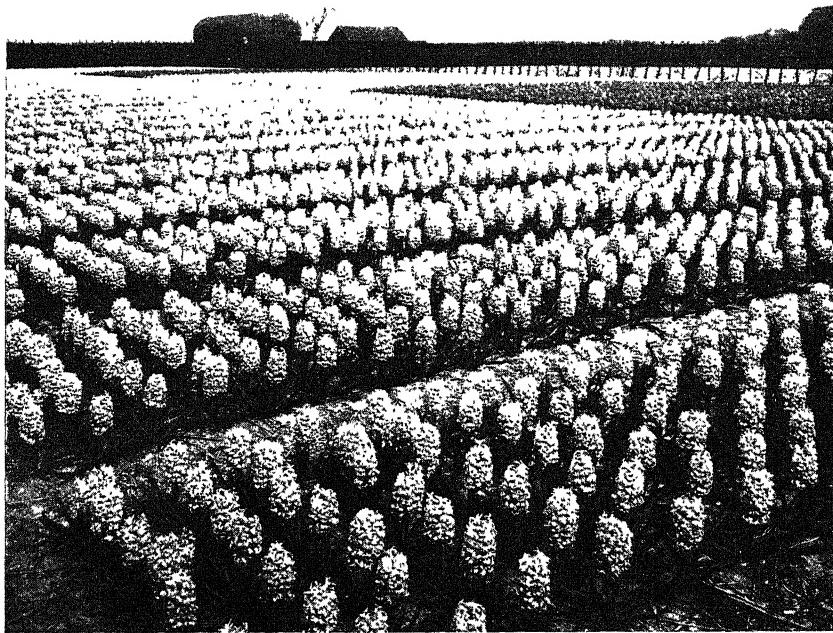


Photo from Ernest Peterffy.

Fig. 244.—Springtime in Holland near Haarlem. Many thousands of beautifully-colored hyacinths, tulips, and daffodils are grown in Holland. Such products yield large returns from relatively small areas of land.

portion of these supplies. Our own country supplies many of these.

Commerce. Long before our own country was settled, Dutch merchants had organized companies for trade with the East Indies. Their vessels made long voyages around the Cape of Good Hope in order to reach these rich islands in the distant East. You will remember from your study of history that these people sent

out Henry Hudson in search of a shorter route to the East Indies. It was on such a journey that he discovered the Hudson River, which he had thought might be the desired passage. You will also remember that in the settlement of our country the Dutch established themselves at the mouth of the Hudson River and that they called their colony "New Amsterdam." Very early they formed the West India Company, which encouraged settlement and trade in the New World. From these early days to the present these people have been world traders. They still own their rich possessions in the East Indies, extending from the Malay Peninsula to New Guinea. These island possessions have an area more than fifty times that of the mother country and a population seven times as great. We can readily understand that these rich possessions must have played an important part in the life of these industrious people. Do you know of any other parts of the world owned by the Dutch at the present time?

Favorable position for trade. Holland has an excellent position with reference to the trade of the Rhine Valley. The Rhine River has always been a natural highway for much of the trade of western Europe. Holland has sometimes been called the "window of Germany looking out on the North Sea." A large part of the trade of western Europe must load and unload in this little country. This means a large and profitable business to the people who live here. Does this help you to understand how Holland happens to be a free-trade country? Rotterdam and Amsterdam handle nearly all of the foreign trade. Great lines of steamers run from these ports to New York, the West and East Indies, and the Atlantic ports of South America.

Trade with the East Indies. Holland has a large and profitable trade with her colonies. From the Dutch East Indies come vast quantities of coffee, tea, sugar, spices, quinine, tobacco, gums, and tin. When received in Holland, the sugars are refined, the tobacco is made into cigars, and the quinine into medicines. The other products are prepared for market in a similar manner. These are then reexported to all parts of the world. Many of them come into our own homes and are counted among the necessities of life. The colonies in turn buy large quantities

of manufactured goods from the mother country, which have been gathered by her from many parts of the world.

BELGIUM

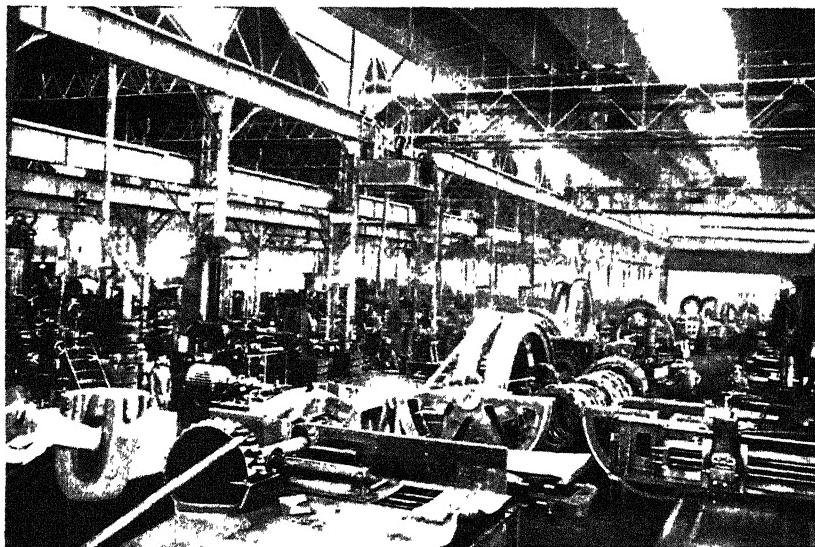
The scene of many wars. For centuries Belgium has been one of the greatest battle grounds of Europe. Here in 1815 the French emperor, Napoleon Bonaparte, after trying to gain control of all Europe, was defeated at the Battle of Waterloo by the English and the Prussians. In the summer of 1914, a hundred years later, the eyes of all the world were again turned toward this little country. Its low, level land offered the German soldiers a much easier route to France than the strongly fortified highlands which separate France from Germany. The brave Belgian soldiers did their best to prevent the German armies from crossing their country into France. This they were not able to do, but they did check their progress across the country, thus giving the French time for further preparation. Had not this extra time been given the French, they would no doubt have been defeated.

The varied industries. It is not, however, in war alone that the Belgian people excel. The little country has long been a beehive of industry. Its manufactures and its commerce have made it possible for the country to support the densest population of Europe. For centuries the people of Belgium have been noted for their skill in spinning and weaving. Before the days of machinery their woolen goods were remarkable for their excellence. Belgium is fortunate in having large deposits of coal. These are in the south where her deposits join those of France. In this part of the country the textile mills produce many fine woolens, linens, and cotton goods. Brussels is noted for its carpets and lace. Liège, the chief manufacturing city, produces woolen goods and steel manufactures. The country also possesses iron mines. In her steel plants she manufactures the machinery needed in her many industries (Fig. 245). She also exports products of iron and steel to other countries.

The development of agriculture. Belgian farm products are among the country's important resources. In the northern part

of the country, where the land is level, the soil is cultivated very intensively. The crops are chiefly flax, hemp, sugar beets, and foodstuffs for the workers of the industrial cities. The country cannot, however, supply all the food needed for the dense population.

Commerce. Because of its position Belgium is a natural gateway for the passage of goods to and from central Europe. The low, flat surface of the country is crossed by a network of rivers, canals, and railroads. The center of these highways of



Courtesy National City Bank, N. Y.

Fig. 245.—A Belgian factory as it was in 1914. This factory and many like it were destroyed by the Germans when Belgium was invaded. Coal and iron make southern Belgium a manufacturing region.

trade is Antwerp, one of the chief seaports of Europe. Besides raw materials needed for the mills large amounts of foodstuffs are imported. Her wheat, meats, and cotton come largely from the United States. The exports of manufactured goods are very valuable. They are sent mainly to the other countries of Europe. Although her industries and trade were greatly injured by the World War, they are being rapidly restored.

Belgium owns the larger part of the Congo basin in *equatorial Africa*. This region furnishes large quantities of palm nuts, palm oil, copper, iron, rubber, and copal, a fossil resin used in making varnish.

QUESTIONS AND PROBLEMS

1. Scandinavian people who have settled in our Middle West have made thrifty farmers and excellent citizens. What reasons can you see for this?
2. What is the leading occupation of Norway? Account for it.
3. Why is Norway so much warmer than Greenland?
4. Why are the Norwegians such good shipbuilders and sailors?
5. Why is the Rhine River very important to the life of the Dutch people?
6. Why are there so many windmills in Holland?
7. Many New York cities and towns have Dutch names. Find as many of these as possible. How do you account for them?
8. Denmark imports most of the feed needed for her cattle. Why does she not raise it? Where does she buy it?
9. How did Belgium play an important part in the World War?
10. Belgium is an important manufacturing country and Holland is not. What reasons can you give for this?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of Europe print the names of the chief products of Norway, Sweden, Denmark, Holland, and Belgium.
2. Under the name of each of the countries named above write a list of the most important imports and exports. Check each import that comes in part from the United States and each export that finds a large market in our country.
3. Make a list of the foreign possessions of Denmark, Holland, and Belgium. Write opposite the name of each dependency the names of the most important products that it supplies to the mother country. Which country is richest in colonial possessions?
4. Compare the area and population of Norway with that of your own state. Which has the greater density of population? Account for the difference.

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CHAPTER XXV

THE COMMERCE AND INDUSTRIES OF FRANCE

Why France has many farms. Although France is only twice as large as our state of Colorado, this little country supports 40,000,000 people, more than half of whom make their living by working on farms. More than three-fourths of France is a plain, a part of the great lowland of central Europe. Thus we find in the west and north much land good for agriculture. The chief highland is the plateau just south of the central part of the country. From this upland the land slopes to the plains in the north and west. The plains of western France allow moist winds from the Atlantic to carry rain to nearly every part of France. The winds from the sea also temper the climate of a large part of the country, thus making possible a large variety of crops. The warm, sunny climate of southern France favors the raising of early vegetables and fruits. Thus surface, rainfall, and temperature make large areas of the country suitable for agriculture.

The place of France in the commercial world. The commerce of France since the World War is exceeded only by that of Great Britain and the United States. Before the war Germany, too, had a greater commerce than France. Since France has not so much coal as Great Britain, her manufactures are less extensive than those of that country. For this reason it has not been necessary for France to import so much cotton and wool as Great Britain. Besides, France has smaller quantities of textiles and metal products to export.

As there is less opportunity to carry on manufacturing, more people are engaged in agriculture than would be the case if France had large supplies of coal and raw materials. Consequently it is

not necessary for the French people to import so large a part of their foodstuffs as do the people of Great Britain. Furthermore, since the population of France is less than that of the British Isles and less than half that of the United States, we should not expect the trade of the French people to equal that of the other countries mentioned. In spite of these conditions we shall find that the commerce of France is large. France imports wool, cotton, silk, and coal for her factories, and food for her people. She exports textiles and other manufactured goods, wines, and other products of her farms.

Chief commercial cities of France. A study of the leading commercial cities of France shows us what trade relations the country has with other parts of the world (Fig. 246). We also see how closely the commerce of each city depends upon the industries carried on in the country. The cities through which most of the imports and exports of the country pass are Marseille in the southeast, Bordeaux in the southwest, and Dunkirk and Havre in the northwest. We shall now study each of these cities that we may understand the important facts of the commerce and industries of France.

Marseille. This city has a very good location for a commercial city. Situated near the mouth of the Rhone River, it can easily receive the products of the farms and factories of southern France. It also receives from other countries the food and raw materials needed by the inhabitants of the Rhone Valley and other parts of the country. Marseille is well connected with other sections by rivers, canals, and railroads. Goods received by water can readily be sent to all parts of the country. Some commodities imported

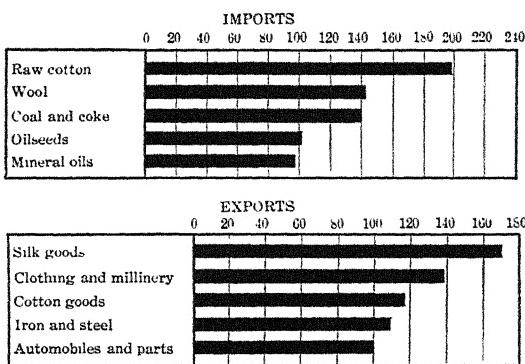
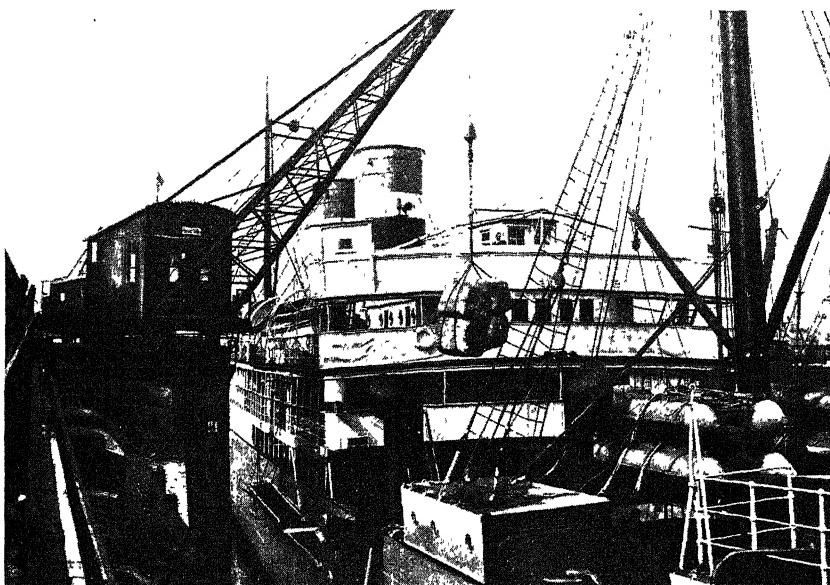


Fig. 246.—The chief imports and exports of France for 1925 in millions of dollars.

at Marseille are sent across the country to be exported from the ports of the northwest. A canal from the Rhone River at Arles to Marseille has been constructed. This will make communication with the Rhone Valley much easier.

Marseille is very favorably located for trade with other parts of the world. The opening of the Suez Canal gave the city an easy route to India and the Far East. This route has added greatly



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 247. — A cargo of American goods being unloaded at the port of Marseille. Goods brought to Marseille may be readily distributed to parts of southeastern France or may be transshipped to French colonies in Africa.

to the importance of the port. The city is easily reached from all the shores of the Mediterranean, including the possessions of France in northern Africa. Besides all these advantages it is very near the Atlantic Ocean and is thus able to carry on trade by water with northern Europe and the Americas (Fig. 247).

The importance of its oil trade. The trade of Marseille is greater than that of any other port of France. Situated in the southern part of France where the warm climate favors the growth of the

olive tree, Marseille carries on a large trade in olive oil (Fig. 273). But the oil produced in France is not nearly enough to meet the needs of its industries and trade. Much is brought to this city from those parts of northern Africa controlled by France, particularly Algeria and Tunis. It is also imported from other countries bordering the Mediterranean Sea. At Marseille the oil is refined for use in France and for export to all parts of the world. Much olive oil is used by people of Mediterranean countries in place of butter. It is also used for packing fish, particularly sardines, for which France is noted.

With the growth of the oil industry Marseille has come to import many other kinds of oil from many different regions. Formerly much cottonseed oil was imported from the United States, but this is now being replaced by peanut oil obtained from the western coast of Africa and from British India. Oil is also extracted from copra, the dried meat of the coconut, and imported from the Philippine Islands (Fig. 248), from central Africa, and from other tropical regions. Many other oil seeds are shipped to Marseille, including palm kernels from West Africa and flaxseed from India.

Not only does Marseille refine and distribute the oils which she thus receives, but she also exports articles manufactured from them. One of the leading industries that makes use of oil is soap making. In this city alone there are more than fifty soap factories. Some of the oil is also used in the manufacture of candles. More than half of the candles made in France are manufactured in Marseille and more than three-fourths of the candles exported are the product of the factories of that city. Of the oil products of Marseille the United States receives salad oils, soap, and candles besides the by-product, glycerine.

Its silk imports. Marseille also owes its growth in part to another industry which is made possible by the warm climate of the Rhone Valley. In this valley the mulberry tree thrives, and the production of silk has been carried on there for more than six hundred years.

Since the cities in the Rhone Valley use in their manufactures more silk than is produced in France, raw silk is imported through

the port of Marseille from Italy, China, and Japan. Some of the silk is manufactured at Marseille, but the industry is carried on much more extensively at Lyon (Fig. 249) and St. Etienne. The latter is noted for its ribbons but the former manufactures more silk goods than any other city in the world. The clear water of the Rhone River is excellent for use in dyeing, and coal is mined



Courtesy Philippine Bureau of Science.

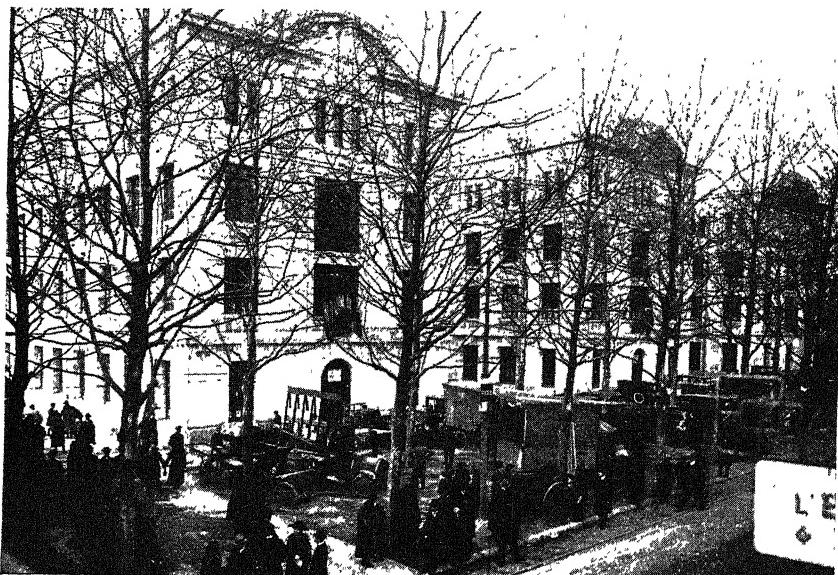
Fig. 248. — Rafts of coconuts being floated down a river in the Philippine Islands. The dried meat of the coconut is known as copra. Oil obtained from copra is imported into Marseille to be used in the refineries of that city.

at St. Etienne. Thus the conditions are favorable for this industry.

Flower growing in southern France. In southeastern France between Marseille and Italy lies the delightful region known as the French Riviera. The beautiful scenery and mild climate of the region have made it a favorite resort for the people of

Europe and America who wish to escape the cold of winter. Mountains lying to the north of the Riviera cut off the cold winds. To the south are the beautiful shores of the Mediterranean whose winds temper the heat of summer.

Here in the small valleys we find hundreds of small farms on which flowers of many kinds are grown. Some of the flowers are



Courtesy National City Bank, N. Y.

Fig. 249.—Buildings in which the Lyon sample fairs are held. The fairs are held to advertise and sell the products of this section of France. The first fair was held in 1916 while the World War was still in progress. The fairs have been very successful, goods to the value of many million francs having been sold from samples displayed at the fair. What kind of goods does this part of France produce?

cut and shipped to supply the flower markets of many of the large cities of Europe; others are sent to factories near by where they are made into perfumes. The export of cut flowers, especially in winter, is one of the chief sources of wealth of this part of France. Two special trains leave every day, carrying willow baskets filled with violets, carnations, roses, and other flowers for Paris, London, Berlin, and the large cities of central Europe and Russia. Immortelles, flowers which keep their color and form

after drying, and many bulbs, including hyacinths and narcissi, are exported from this region to the United States.

The flowers are raised in small valleys lying at the foot of the mountains. There roses, violets, jonquils, orange blossoms, tuberoses, and other flowers are gathered by thousands of pounds



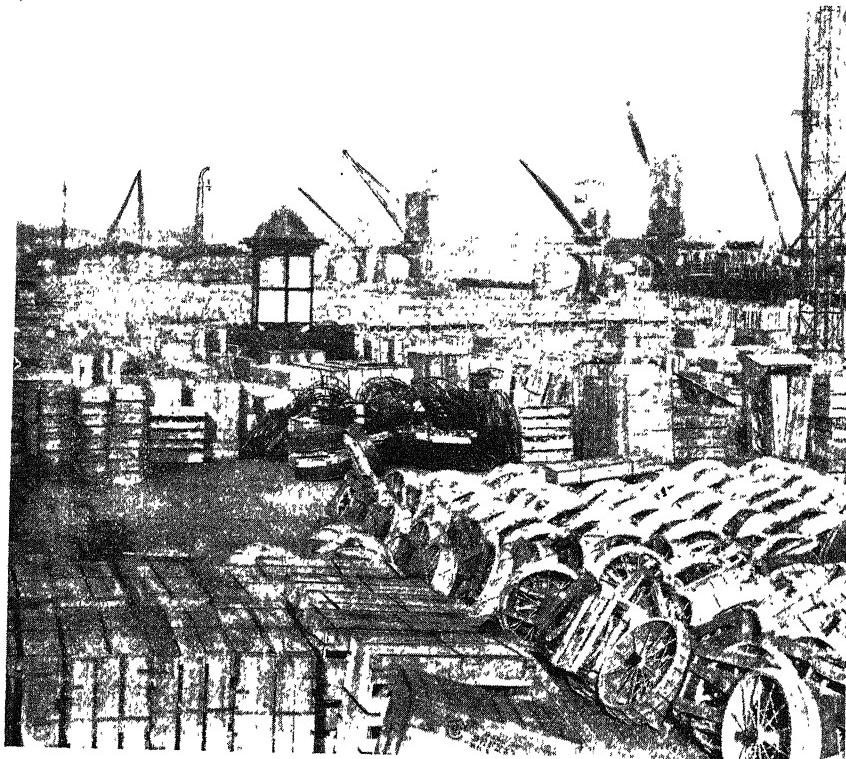
© Ewing Galloway.

Fig. 250.—One of the laboratories in a big perfumery at Grasse, France. Here the essential oils used in making perfumery are extracted from the petals of many kinds of flowers.

and taken to factories where perfumes are made. It takes many pounds of flowers to make even an ounce of the essential oil, as the liquid is called, which gives the odor to the perfume (Fig. 250). It takes more than a ton of roses, a heavy load for a horse to draw, to make one pound of attar of roses. When we consider the time and labor necessary to grow the flowers and to extract the oils, we are not surprised to learn that the product is very expensive.

In the vicinity of one town, Grasse, more than sixty thousand acres are devoted to the growing of flowers for the factories of the town. Thousands of people earn their living on these farms and in the factories. The perfumes, which are famous for their excellence, are exported to all parts of the world. The large firms which manufacture the perfumes have offices in Paris and export many of their products through that city.

The commerce of Bordeaux. Bordeaux is a deep and safe port situated far inland at the mouth of the Garonne River. We shall be interested to know why this port, located far from the great manufacturing centers, has become the important city that

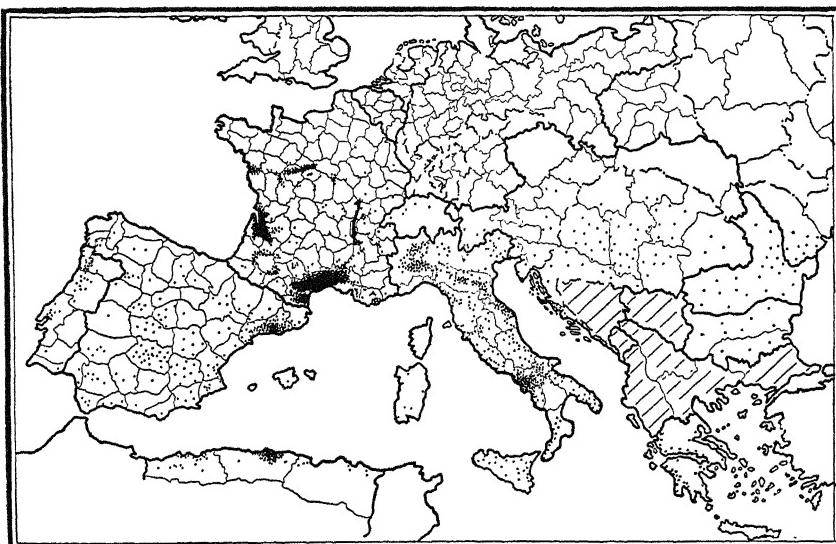


Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 251.—Wharves at Bordeaux covered with agricultural machinery imported from the United States. The great quantity of machinery needed gives us some idea of the importance of agriculture in France.

it is. By looking at the map (Fig. 213) we see that Bordeaux can be reached from many parts of southwestern France by means of rivers. Canals connect these rivers with the Rhone Valley. Railroads, of course, connect the city with all parts of France. The most important advantage of Bordeaux, however, is its position in the middle of the chief grape-raising region of France. It has long been the leading city for the export of French wines. Imports to this city may be distributed readily throughout a large agricultural region (Fig. 251).

The wine industry. In our study of the United States we found fruit-growing to be an important industry in several parts of the



From The Geography of the World's Agriculture.

Fig. 252.—The principal grape-growing areas of southern Europe.

country — in California, in the region southeast of the Great Lakes, in Florida, and in parts of several other states. We should not, however, think of fruit-growing as one of the leading industries of our country. In France, on the contrary, the growing of grapes for making wines is so important as to rank among the leading industries of the country.

The parts of France in which the most of the grapes are raised

and in which most of the wine is made are the valleys of the Rhone, the Garonne, and the Loire, and parts of the valleys of the Seine and the Moselle (Fig. 252). The soil and climate of these regions are especially adapted to the production of grapes. The French people have become skilled in raising the fruit and in making and curing the wines. Wines take their names from the



Photo from Brown Bros

Fig. 253.—A large vineyard where grapes are grown for making French wines. Notice the manner in which the heavy vines are supported. Do you think of any way in which the mountains in the distance might help to make this a good region for growing grapes?

places in which they are made, such as Champagne, Burgundy, and Sauterne.

Do you know that a large part of the grapevines of France have American roots? About 1875 an insect brought from America to France attacked the roots of the vines and nearly destroyed the industry of the country. In the attempt to save the vines there were found in the United States grapevines which were not molested by the insect. The French imported millions of such

vines from our country and on them grafted shoots from their own plants. Thus they were able to raise the same kinds of grapes as before. In this way their vineyards and their wine industry were saved (Fig. 253).

The French people consume a large part of the wine produced in the country. That they may supply their foreign market they import wines from their possessions in Africa and from Italy and Spain. These cheaper wines they either use themselves or mix with their own wines for export. The exports are sent to the countries of northern Europe, to Canada and Latin America, and to the Far East. Bordeaux, as we have seen, is the chief port for the exportation of wines.

The ports of northwestern France. The most important manufacturing region of France is in the northern and northeastern parts of the country. This region receives its imported food and raw materials and exports its manufactured goods mainly through the ports of the northwestern coast. The most important of these ports are Havre and Dunkirk. Only small vessels can ascend the river to Paris. The large ocean-going vessels must discharge their cargoes at Havre or perhaps at Rouen. Havre is known as the port of Paris. Here are received many of the raw materials and much of the food imported by the country. The fine manufactures known as Paris goods as well as the products of many other French cities are exported through Havre. Most of the trade with the United States and the other countries of the western hemisphere is carried on through this port.

Dunkirk, situated near Great Britain and other countries of northern Europe, carries on trade chiefly with those countries. The trade of this port has grown rapidly. It is near the large manufacturing cities of northern France. Much of the wool and other raw material needed in that industrial region comes into the country through Dunkirk. The exports are largely foods and manufactured goods which are sent to the countries of northern Europe.

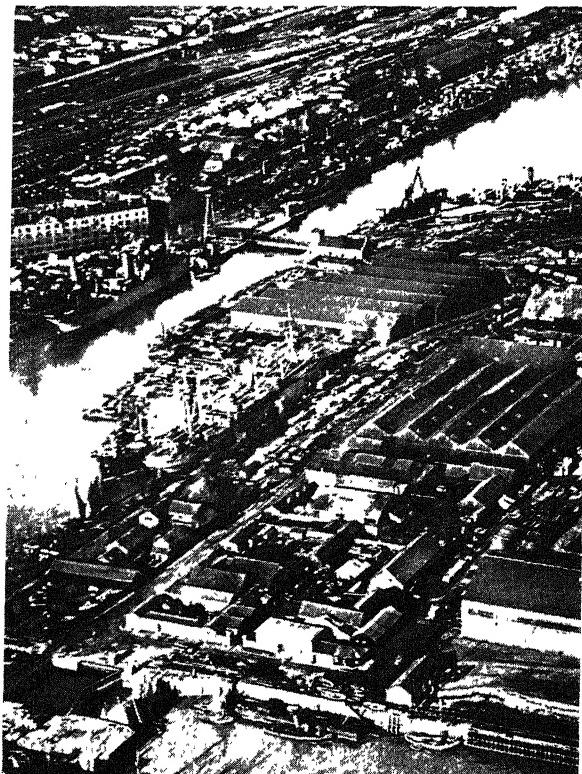
St. Nazaire is one of the best equipped ports of France. It serves the whole valley of the Loire River. During the World War St. Nazaire was the main port for receiving troops and

supplies from the United States (Fig. 254). Cherbourg is an important port of call for steamers sailing to or from the ports of northern Europe.

It is in northern and northeastern France, the regions served by the ports of the northwest coast, that we find the cotton and woolen mills and many of the most important iron and steel plants of the country. It is also in this same region that a large part of the food products of the country are raised.

The textile industry of the northern section. In our study of southeastern France we found the making of silk goods an important industry. In the cities of the northern part the products of the textile mills are cotton, woolen, and linen goods. The products of these mills are

among the finest in the world. In the same way that calico got its name from Calicut, India, some textiles have taken their names from the cities and towns of France which are famous for their manufacture. Cambric gets its name from Cambrai, a town



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Fig. 254.—A view of St. Nazaire from an American airplane. St. Nazaire is second only to Brest as a port on the Bay of Biscay. The docks and warehouses were built largely by Americans during the World War.

of northern France. Lisle thread is a very fine thread which takes its name from the city of Lille. It is used in making hosiery, underwear, gloves, and other knit goods. Fine cotton and silk



Fig. 255. — A scene in Strasbourg, one of the chief cities of Alsace-Lorraine. The part of Alsace-Lorraine in which Strasbourg is situated was one of the leading textile manufacturing regions of Germany, but it is now under the control of France.

goods, such as tulle, organdie, voile, and chiffon, keep their French names even when manufactured in other countries. Perhaps you can think of others. Cretonne, a kind of cotton fabric, is named for the Frenchman who first made it.

Cotton goods. Lille, Rouen, and St. Quentin are some of the cities that have been noted for the making of cotton goods. These cities are favorably located near the coal fields of northern France. These coal fields are a continuation of the coal fields of Belgium. Moreover, coal can readily be imported to this part of the country from Great Britain. Much of the coal is brought to Rouen. The greater part of the raw cotton comes from the United States. Some is also imported from Egypt and India. The textile mills of Alsace-Lorraine add greatly to the importance of the cotton industry in France (Fig. 255).

As in the manufacture of silks, the taste and skill of the French workmen play an important part. French cotton goods, because of their superior quality, are imported even by countries which produce more cotton goods than they can use. Some of these French cottons are sent to the United States and Great Britain.

Woolen goods. French woolen goods are also noted for their fine quality. Long before the days of machinery, French workmen made beautiful fabrics known as tapestries, which were used in decorating the churches and royal palaces. This industry is continued to-day by the well-known Gobelin factories of Paris.

The French woolen mills obtain some of the finest wool in the world from sheep raised in northern France. However, only a small part of the wool needed for the factories is produced at home. Large quantities are imported from Argentina and Australia through the ports of Havre and Dunkirk. Amiens, Reims, and other cities manufacture woolen goods. French dress goods are of excellent quality. Large quantities of these goods are exported, some of them coming to the United States.

The agriculture of northern France. Besides wool, raw cotton, and textiles, foodstuffs also pass through the ports of northwestern France. Foods are both exported and imported. Unlike the people of central Europe, the French people prefer bread made of wheat flour. To supply the French markets the farmers of the country in some years raise nearly one-half as much wheat as the United States. The land is cultivated very carefully, and more grain is raised on an acre than in this country (Fig. 256). Even then, not enough grain is raised, and it is necessary to import

wheat from other countries. Since the chief wheat-growing region is in the northern half of France, this part of the country raises more wheat than it needs. Some of the surplus is exported to Great Britain. In our study of Marseille we learned that wheat is brought in from northern Africa, Russia, and other countries. For grinding her wheat France has many flour mills scattered throughout the country.

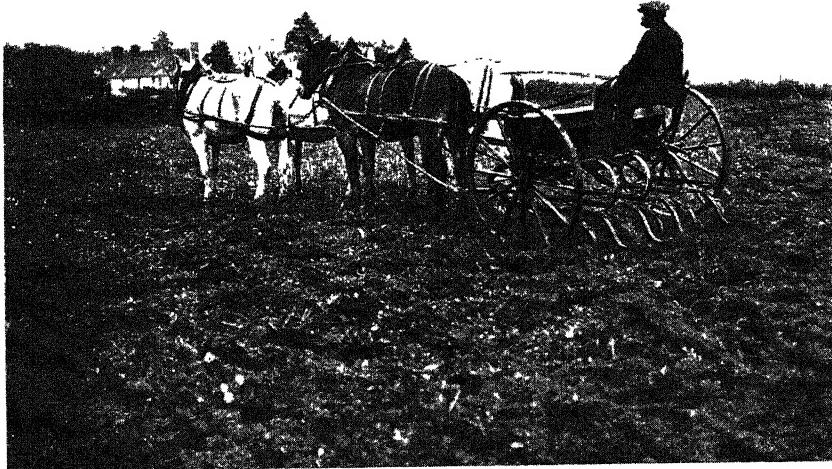


Fig. 256. — Planting wheat on the plains of France. France is one of the leading countries of Europe in the production of wheat. The crop is almost large enough to supply the home demand.

Stock raising in France. Large numbers of cattle are raised on the plains of the north and west. These plains lying near the Atlantic Ocean receive plenty of rain from the westerly winds which prevail in this latitude. The meat produced in France is consumed at home, but dairy products are exported in large quantities. In northwestern France much of the milk is made into butter, some of which is exported to Great Britain. Because of the excellent market for dairy products in the densely settled

parts of northern Europe, the French have begun to raise larger numbers of cattle and fewer sheep.

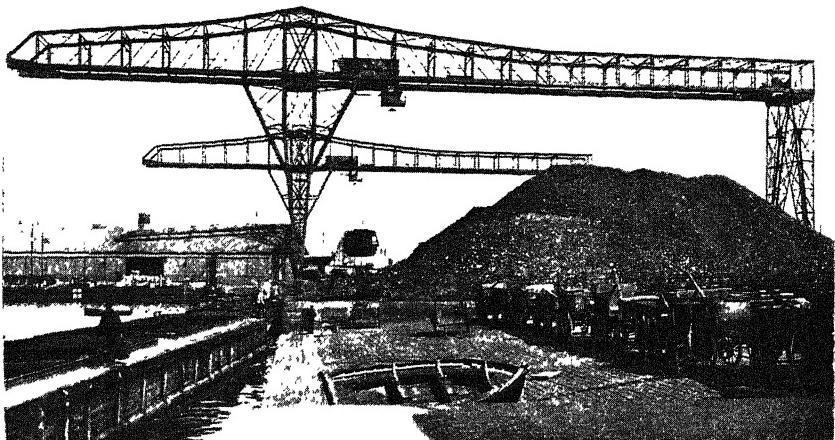
Cheese is an important product of the French dairies. We have all eaten or at least heard of Neufchâtel and Roquefort cheeses, both of which are made in France. Roquefort cheese is made by adding bits of bread to the curd of sheep's milk. It is then left for some time in cellars or in the limestone caves of the region to ripen. This and other French cheeses are exported to many countries. Hundreds of thousands of pounds are sent to the United States each year.

Manufactures of iron and steel. Had it not been for the skill of her workmen, France would have found it very difficult to compete with the United States, Great Britain, and Germany. Before the World War each of these countries had much larger deposits of coal and iron than France. Any country that is obliged to import coal or iron for its manufactures finds it almost impossible to produce its goods as cheaply as countries which have large supplies of those minerals. France has both coal and iron, but in most cases they are not found near together. This is a disadvantage because it is necessary to carry the coal to the iron ore or the ore to the coal.

Nearly all the iron of France is mined in the northeastern part of the country. Now that Alsace-Lorraine belongs to France, the iron mines of that province are under French control. These mines are so rich that they gave Germany the larger part of her iron ore. Before the World War France was obliged to import iron ore and pig iron from Germany and Spain. The largest iron and steel plants of France are near Lille, Nancy, Le Creusot, and St. Etienne. The iron and steel works of northern France are situated near the coal fields. Much coal is also imported from Great Britain. Factories in northern France produce the complex machinery so necessary in making the fine textiles of that region. The steel mills of Le Creusot are located near coal fields. Rails, locomotives, and cannon are the chief products of these plants. France also produces the steel used in building the ships of her navy and her merchant marine. The French intend that in so far as possible the exports and imports of the

country shall be carried in French ships. Their navy, too, is one of the largest.

France has been obliged to import coal for many years (Fig. 257). Just before the World War she imported one-third of the coal used. During the World War some of the most valuable coal mines of northern France were flooded with water and the machinery destroyed. It is estimated that it will be fifteen years before all



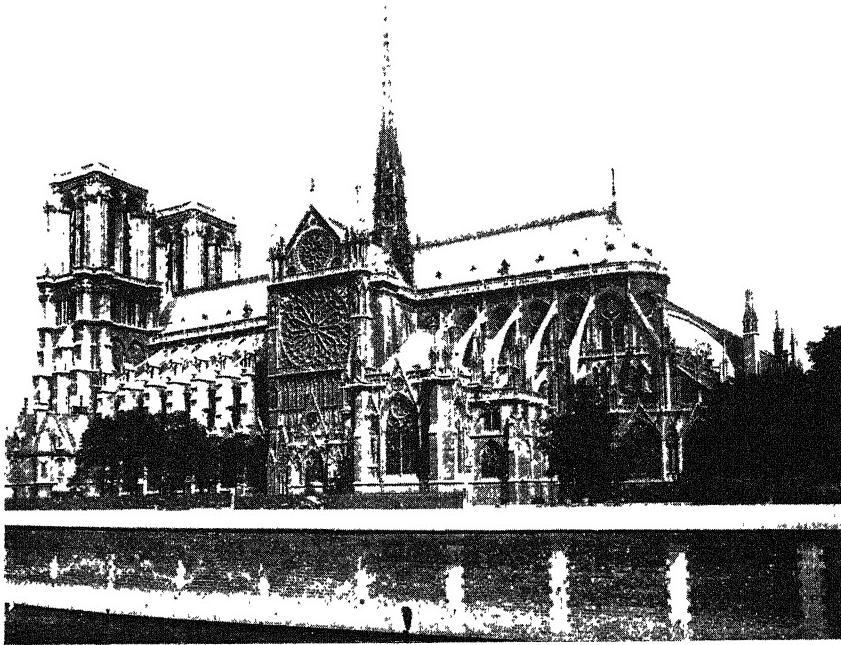
Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 257.—A large pile of coal on the water front at Havre. Coal is one of the chief imports of the country, the greater part coming from Great Britain.

the mines of this region can be again worked to their full capacity. The peace treaty following the war gave France full possession for fifteen years of the coal mines of the Saar Valley. But even these deposits added to her own will not be enough to supply her mills and factories and the great ironworks of Lorraine.

Paris and Paris goods. In no other French city is the character of the French people so well shown as in Paris. It has given rise to the saying, "To see Paris is to see France." The city itself

is one of the most beautiful in the world. Its streets are wide and shaded by many trees. The city contains many beautiful buildings (Fig. 258). Its art galleries contain some of the finest paintings and statuary in existence and attract lovers of art from all parts of the world. Works of art are purchased in France and taken to the homes or art museums of other countries. When



© Ewing Galloway.

Fig. 258. — The famous cathedral of Notre Dame. This building is noted throughout the world for the beauty of its architecture. This is only one of the many beautiful buildings of Paris.

you visit an art museum in one of our large cities, or when you see pictures of the works of great artists, find out if you can where and by whom the original work was done. In this way you will see how largely we depend upon France, Italy, and other countries of Europe for our great paintings and other works of art.

Paris, too, is the center from which the finest manufactures of all

parts of France are exported. Very fine grades of china and porcelains are made at Sevre near Paris and at Limoges in the central highlands. These products as well as the silks of Lyon, the laces and textiles of northern France, and the perfumes of Grasse are placed on sale in Paris. The dressmakers and milliners of Paris have long set the standards for the world. Buyers for large importing firms in the United States and other countries go to Paris each season to learn the styles and to lay in a supply of hats, gowns, gloves, and other wearing apparel. Many of the goods made in and near Paris must be classed as luxuries.

QUESTIONS AND PROBLEMS

1. What physical conditions in France favor agriculture?
2. Why is the commerce of France less than that of Great Britain?
3. Why has Marseille become the most important commercial city of France?
4. Show how some of the chief manufacturing industries of Marseille have had their beginning in the agricultural products of France.
5. Why is Marseille particularly well situated for the refining of vegetable oils?
6. Which of the industries of Marseille would be likely to spring up only in southeastern France? Which could develop in other parts of the country nearly as well?
7. Describe the manufacture of perfumes in the Riviera.
8. Why has France become a great wine-making country?
9. Why are the chief manufacturing cities of France in the northern part of the country?
10. What advantages has Havre over other ports of northwestern France?
11. Which do you think is the more important factor in the manufactures of northern France, the resources of the region or the taste and skill of the people? Why?
12. What industries of France benefit from the resources of Alsace-Lorraine? Why?
13. What agricultural products of northern France are exported?
14. In what parts of France are the most important iron and steel plants? What are the advantages of their locations?
15. How do the products exported from Paris differ from those of nearly all other commercial cities? Why? Of what great advantage is this difference to France?

SUGGESTED PROJECTS AND EXERCISES

1. Print on an outline map the names of the chief manufacturing and commercial cities of France.
2. On an outline map of the world draw trade routes connecting the ports of France and the ports of her colonies. Print in the colonies the names of products sent to France. Print near ports of France the names of products sent to the colonies. Draw trade routes connecting ports of France with important ports of other countries. Print near ports of the United States the names of products received from France.
3. Make a collection of pictures and clippings relating to French industries and commerce. Make a notebook of pictures, maps, and clippings relating to French agriculture.

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CHAPTER XXVI

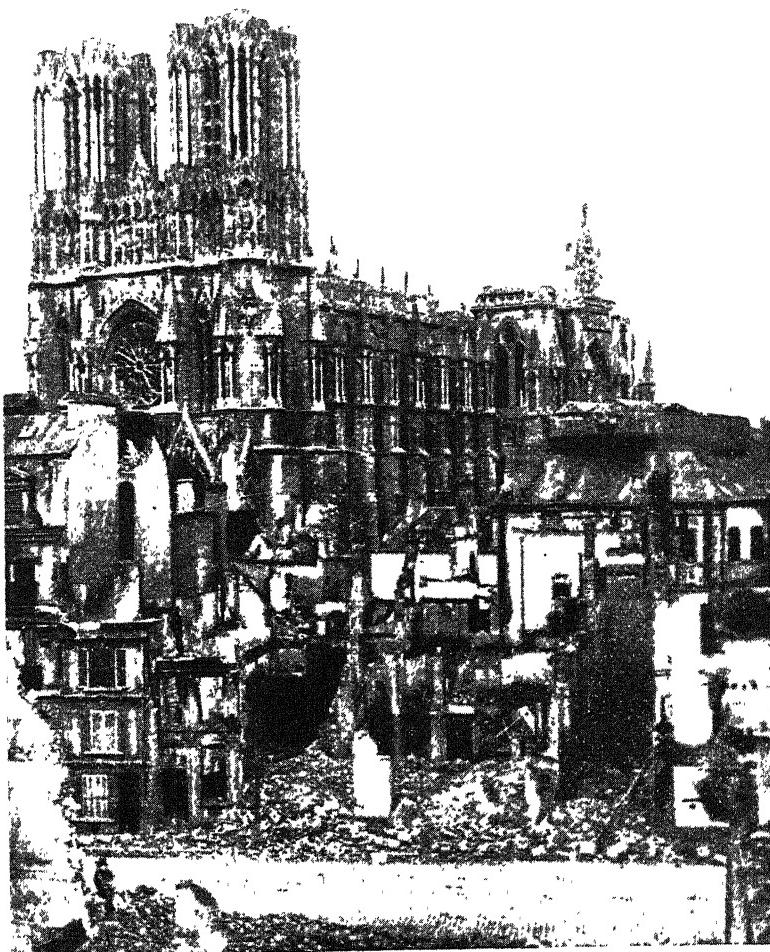
FRANCE AS A WORLD POWER

France's leadership on the continent of Europe. In 1914 the most influential nation of the mainland of Europe was Germany. To-day that position is held by France. This is due partly to the fact that France was on the winning side of the World War and partly to her vigorous efforts so to strengthen herself as to remain superior in power to the foe by whom she came so near being beaten. Other nations have helped to strengthen her position by permitting her to take vigorous measures against Germany when that nation has failed to meet its treaty obligations. If France succeeds in keeping peace in western Europe, she will have earned the gratitude of the world.

French influence on other continents. The influence of the French people is not limited to the continent of Europe. No other country except Great Britain has colonial possessions greater than those of France. Unfortunately for her, she was long ago obliged to give up her most valuable possessions. Canada and French interests in India were surrendered to Great Britain just before our American Revolution. The valuable Louisiana Territory was sold by Napoleon to the United States in 1803. Thus France was left with only a few unimportant colonies. But during the last century France has gained control of large areas in Africa and valuable territory in southeastern Asia.

French influence in Africa. In Africa France controls French West Africa and the Sahara, Algeria, Tunis, French Equatorial Africa, or French Congo, Madagascar, French Somaliland, and a few other minor possessions. Algeria is considered a part of France itself. A large part of Morocco is a protectorate of France. Parts of two former German colonies in Africa, Kamerun and Togoland, have passed to the control of the French.

All these regions are benefited by French control. Roads and railroads have been built and all means of communication greatly improved. As an illustration, Timbuktu was formerly reached



Courtesy American Express Co.

Fig. 259.—The beautiful old cathedral of Reims where for centuries the French rulers were crowned. It was partially destroyed by German gun fire during the World War. Doubtless it will be many years before it can be fully restored.

only by caravans across the Sahara. Now the entire journey from Europe to Timbuktu can be made by steamer and rail. Many telegraph and telephone lines are also in operation in French-controlled Africa.

Another sign of progress in these regions is the gradual disappearance of the camel. In former years the Arab was content

to sway slowly along over the desert on the back of his camel. To-day he is not satisfied unless he is the owner of at least a small automobile. These cars run quickly from oasis to oasis carrying the farmer and his crop of figs and dates on their way to market. In the future no wide-awake Arab will be content to jog along on his camel while neighbors shoot by him in their American cars.

The French are introducing new systems of agriculture and are teaching the people how to carry on their industries according to modern methods. French engineers have sunk wells in parts of the deserts of Algeria and Tunis. Windmills from our own Middle West are used to

Courtesy American Express Co.
Fig. 260.—In winter many of the streams of Morocco are filled with water while in summer they are merely chains of pools. Why is this so? Why has this man brought casks to the river? Why is there vegetation only along the river banks?

pump water from the wells to irrigate the land (Fig. 260). Between Tunis and Carthage there are hundreds of such windmills. Salesmen from Illinois have found in Algeria and Tunis an excellent market for this American product. The use of the windmills has greatly increased the value of the products of the Arabs who carry on the farming in this region. The crops are three or four times as large as they were before windmills were used.



The French are also helping to give their colonies in Africa a more stable form of government. This makes it safe for Europeans to settle in the more desirable parts of the country. With the coming of settlers from France and other countries of Europe progress in industries and government is sure to be rapid.

These African possessions supply France with large quantities of food and raw materials and offer a market for many of her manufactures. From Algiers (Fig. 261) and Tunis France re-



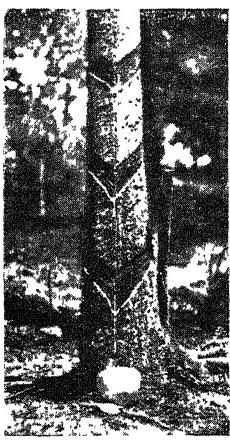
Courtesy American Express Co.

Fig. 261.—The harbor of Algiers, the chief sea port of Algeria. The commerce of Algiers is chiefly with France. Through this port pass wines, tobacco, wheat, figs, automobiles, petroleum, and clothing. Which of these articles are exports and which are imports?

ceives wheat and other grains, much olive oil, wine, dates, and esparto grass, which is used in making paper. In return these countries receive textile machinery and other manufactured goods. From the more southern of her African possessions, the Sudan and Equatorial Africa, France receives gold, ivory, ostrich feathers, palm oil, rubber, and fruits. The chief imports which France receives from the island of Madagascar are hides and gold.

As the African possessions are developed they will supply France with still larger quantities of food and raw materials. As the people advance in civilization they will need more of the manufactured goods of the mother country. At the same time through French influence the people are becoming accustomed to higher standards of living, and the region is being made more useful to the whole world.

French influence in Asia. The chief area controlled by France in Asia is Indo-China, a territory lying to the south of China.



Courtesy Goodyear
Tire and Rubber Co.

Fig. 262.—In French Indo-China, as in all near-by regions, the growing of rubber trees is an important occupation. This tree has been tapped and a jar placed at the foot of the tree to catch the sap.

Indo-China is much larger than France and contains nearly half as many people. Here, as in Africa, many improvements are being made. Railroads and telegraph and telephone lines are being constructed. Irrigation systems have also been developed. The chief product and export of Indo-China is rice. Cotton and sugar are also exported. Another product, the output of which is increasing rapidly in this part of the world, is plantation rubber (Fig. 262). The British and Dutch colonies of the Far East produce a very large proportion of the world's supply of plantation rubber. Only a small beginning has been made in the production of rubber in French Cochin-China. Doubtless this industry will be much greater in future years.

French influence in America. Of her once vast possessions in the western hemisphere, France now holds only French Guiana, a few small islands in the West Indies, and two

small islands near Labrador. The influence of her early settlements is greatest in eastern Canada, where large numbers of people still use the French language. Many of the French workers of Canada have migrated to the United States, to find employment in mills and factories.

QUESTIONS AND PROBLEMS

1. How has French control improved conditions in northern Africa?
2. How do her African colonies increase the trade of France? What products do we receive from those colonies?
3. Of what value is it to the French to construct railroads and telegraph lines in Indo-China?
4. What products of Indo-China are most valuable to the French? Why?
5. Of what value are the colonies of France to the mother country?

SUGGESTED PROJECTS AND EXERCISES

1. Make a map of France showing bordering countries and waters. Indicate by means of arrows the directions from which different races have entered the country in centuries past.
2. On a map of North America show places having names of French origin, as Montreal, Louisiana, Joliet, New Orleans, etc. From your histories learn why these places were so named.
3. On an outline map of the world color all French possessions. Draw on the map trade routes connecting French ports and ports of the colonies. Indicate the products passing over these routes.

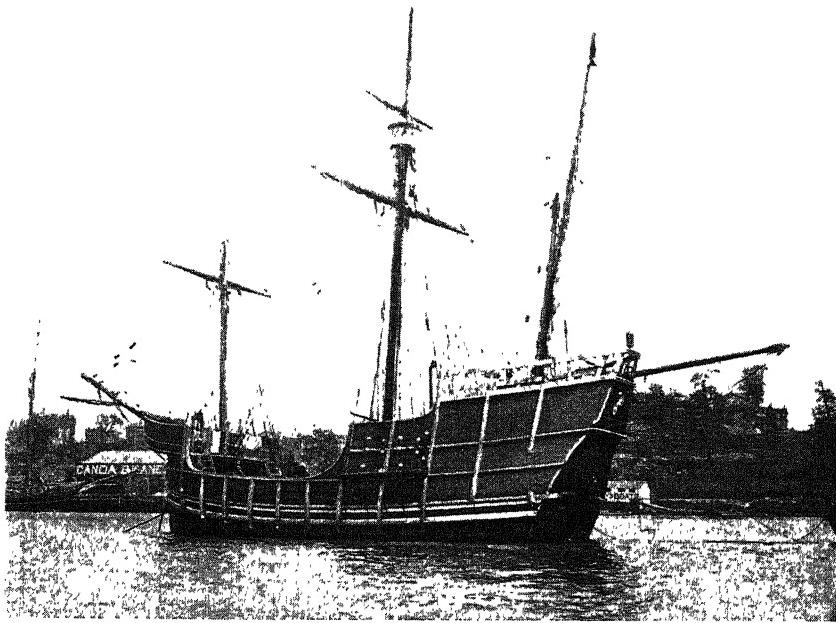
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CHAPTER XXVII

SPAIN AND PORTUGAL

Former greatness. Spain and Portugal formerly played a much larger part in world affairs than they do to-day. In the



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Fig. 263.—A reproduction of the *Pinta*, one of the vessels of Columbus. The voyages of Columbus and other Spanish explorers gave Spain a claim to large areas in the New World.

days of Columbus they were among the most influential countries in the world. You remember that Columbus went from court to court seeking aid in fitting out his ships for the voyage across an unknown ocean. Only the king and queen of Spain were willing

to give him assistance (Fig. 263). It was they who provided him with ships and men for his voyages of discovery. Daring Spanish and Portuguese navigators of that time by their discoveries gave to these two countries their extensive colonial possessions.

For seven hundred years before the discovery of America much of southern Spain was under the control of the Moors, a Mohammedan people who conquered that part of the country and governed it. Much of the prosperity of the country during those centuries was due to the Moors. They built extensive irrigation works, which the Spanish have not kept in repair. Their knowledge of agriculture was greater than that of any other people of Europe. Their influence upon the architecture of the country may be seen to-day in many of the beautiful buildings of the country.

Spain once controlled parts of North America and nearly all of South America except Brazil, which belonged to Portugal. Spain possessed a colonial empire on which the sun never set. But one by one the colonies in America threw off the Spanish yoke and became republics. The Philippine Islands, Cuba, and Porto Rico passed from the control of Spain at the close of the Spanish-American War. Spain has left only the Canary Islands and small parts of western Africa. At the present time Spain is not a very prosperous or a very progressive country. Let us see why Spain and Portugal have not been able to keep pace with some of the more successful countries of Europe.

Conditions which hinder development. The surface and climate of these countries are their greatest handicap. Over large areas there are extensive plateaus crossed by many mountain ranges. These elevations, besides making transportation difficult, shut out much of the moisture brought by winds of the Atlantic. Furthermore, as in other countries of the Mediterranean region, most of the rain falls in the winter rather than in the summer, when it is needed by growing crops.

Still another handicap to prosperity is the people themselves. They are pleasure-loving and do not apply themselves seriously to the tasks to be done as do their more progressive neighbors of northern and central Europe. The management of the farms

and industries is too often left to ignorant and careless overseers and workmen. Throughout both these countries the methods of farming are much the same as they have been for hundreds of years. Much work is done by hand or with the use of very simple tools and machines. The people seem content to do as their forefathers did. Thus we see why the commerce of these countries is not large and why the people have comparatively little influence in world affairs.

Resources awaiting further development. While rugged surface and arid climate are great disadvantages, they do not prevent a much greater development of resources than now exists. The plateaus offer opportunities for grazing and the raising of grain. The valleys of the Ebro and the Guadalquivir together with the plains bordering the Mediterranean and the Atlantic contain much fertile soil. This soil when irrigated and properly cultivated yields excellent crops of fruits and vegetables.

Mines of iron, coal, copper, and lead supply excellent materials for manufacturing and commerce. Better means of transportation and better methods of manufacturing would do much to make Spain and Portugal more prosperous than they now are. On the high mountains of northern Spain there is heavy rainfall and some snow. Rivers flowing from these mountains offer excellent opportunities for the development of water power. Only small amounts of the power have as yet been used. Much of the water power as well as the mines of the country have been developed by foreign capitalists.

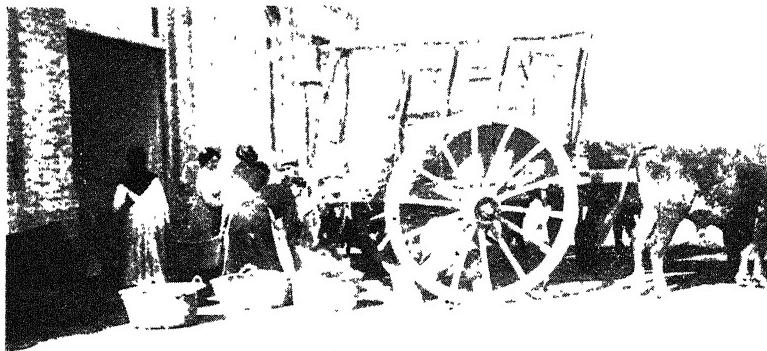
Agriculture and grazing. Spain and Portugal are both noted for their fruits. Spanish olives (Fig. 264) are considered the best. Olives and olive oil are exported in large quantities. American merchants maintain large plants in Spain for pickling the fruit and for the preparation of the oil for the United States market.

Grapes and wine are also important products of both these countries. Port wine takes its name from Oporto and Madeira from the islands off the coast of Africa belonging to Portugal. Malaga grapes are well known in many countries, including our own. Find Oporto, Malaga, and the Madeira Islands on the map.

Many of the large cluster raisins sold for table use are produced in Spain and widely exported.

Oranges are raised in many places along the coast on the lowlands. Valencia is noted for its oranges. Since the rainfall is slight, irrigation is necessary in many of the orchards and vineyards. Onions as well as oranges are grown in the vicinity of Valencia and constitute one of the important exports.

The chief grains are wheat, rye, and barley — crops which grow very well where the rainfall is slight. In the northwest sugar



Courtesy of H. J. Heinz Co

Fig. 264. — Bringing olives in from the orchards. These heavy carts drawn by oxen can carry a large quantity on each trip. Much of the work is done by women. The green olives are pickled, while much of the ripe fruit is used in making olive oil.

beets have come to be one of the important crops. Before the Spanish-American War Spain obtained her sugar from Cuba, which was then her colony. Since the loss of that possession, the country has supplied itself with sugar from its own beet crop.

On the plateaus of the central part of the country sheep raising is an important occupation. The well-known Merino sheep were first raised in Spain. To that country all important sheep-raising regions are indebted for the improvement of their flocks. In Spain as in Switzerland and Norway the flocks are driven to the

mountain pastures in the summer and are sheltered in the lowlands in the winter.

Forest products. One important product of these two countries is cork, the bark of the cork oak. This is stripped off the tree in great sheets. Only a small part is made into stoppers and other useful articles in Spain and Portugal. By far the greater part is exported as bark to other countries, where it is used in manufactures. The forests are largely in the northern and western parts of the peninsula where the rainfall is greatest. The nuts of the oak and chestnut trees furnish food for swine, which are raised in that region in considerable numbers.

Spain rich in minerals. Spain has rich deposits of minerals of various kinds, but the Spanish have done comparatively little to develop these resources. There are large deposits of coal and iron in the Cantabrian Mountains in the northern part of the country. Iron ore is exported from Bilbao to Great Britain, France, Holland, and some of the steel plants near the Atlantic coast of the United States. Some of the ships carrying ore to the British Isles bring coal to Bilbao, where iron is smelted and some steel manufactured. The Spanish coal fields are larger than those of Germany, yet they have been worked but little. With better facilities for transportation Spain could use much more of her own coal and thus increase her manufactures and trade. Other minerals that occur in large quantities are mercury or quicksilver, copper, and lead.

Industry and trade. The chief exports of these countries are wine, cork, iron ore, and copper. Although agriculture is the chief occupation it is necessary to import wheat and corn. The chief ports of Spain are Barcelona, Bilbao, and Cartegena. Cork is exported mainly from Barcelona and Seville, iron ore from Bilbao, and oranges and onions from Valencia. Besides being a commercial city Barcelona manufactures textiles, leather, shoes, and paper. Madrid is the capital (Fig. 265) and largest city of Spain. It owes its importance to its location in the central part of the country and to the fact that it is the capital. Lisbon at the mouth of the Tagus River is the chief port of Portugal. Lisbon manufactures some textiles, which are sent mainly to Por-

tuguese colonies. Vessels sailing for South America, South Africa, and the West Indies make their last call at Lisbon. This adds to



Courtesy American Express Co

Fig. 265.—The Royal Palace, Madrid. Spain is one of the few countries of Europe which does not have a republican form of government. Can you name the republics that have been established since 1918?

the business of the port because of the mail and passenger service that it gives to the countries of central Europe.

QUESTIONS AND PROBLEMS

1. What parts of North and South America were once under the control of Spain and Portugal?
2. What parts of the United States have rivers, mountains, and cities with Spanish names? Why?
3. What languages are spoken by the people of Mexico, Central America, Brazil, Argentina, and Cuba? Why?
4. Why did Spain not take part in the World War?
5. What parts of Spain and Portugal have the most rainfall? The least? Why?

6. In what parts of these countries do we find the largest numbers of people? Why?
7. How do the products of the plateaus differ from those of the valleys? Why?
8. How can countries with so few manufactures afford to import food?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map locate the plateaus, mountains, rivers, and surrounding waters of Spain and Portugal.
2. On an outline map print the names of the chief products and the principal cities of these countries.
3. On an outline map of Europe draw steamship lines connecting the chief ports of the Mediterranean with those of northwestern Europe. Which ports of Spain and Portugal are easily reached from those lines?
4. Make a list of Spanish products that you know, have heard of, or have seen advertised.
5. Make a list of Spanish songs, dances, and pictures showing Spanish and Portuguese life and industries. What does this list and collection tell you of the people themselves?

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CHAPTER XXVIII

ITALY AND SWITZERLAND

ITALY'S GIFTS TO CIVILIZATION

Why we are interested in Italy. In 1492 America was discovered by an Italian. In recent years thousands of Italians have come to America to make their homes. Many American tourists visit Italy every year to enjoy the beauty of its mountains, its lakes, and its skies (Fig. 266). Other objects of interest are the ruins of ancient buildings which stood when Rome ruled all the known world. But quite as interesting to the tourist are the churches and palaces with the paintings and the sculpture which adorn them. These are the work of Italian artists, who have ranked among the greatest in the world.

Americans are also indebted to Italian scientists, who have done much to aid in the world's progress. Galileo made the first telescope and discovered many new facts about the sun and stars. Torricelli gave us the mercurial barometer; Galvani, the electric battery; and Marconi, the wireless telegraph.

The influence of Italy. Few countries have had greater influence upon the rest of the world than Italy. The laws of nearly every country in the world are founded in part upon the laws of ancient Rome. Latin, the language of the Romans, and the literature of that time have greatly influenced the language and literature of western Europe and of all the western hemisphere. In music the Italians have been leaders.

The influence of Roman law. One of the greatest gifts that the Romans made to the world was the code of laws that they passed on to other nations and to later generations. During the latter years of the Empire all the laws of Rome were collected and systematically arranged (Fig. 267). This collection, or code, of

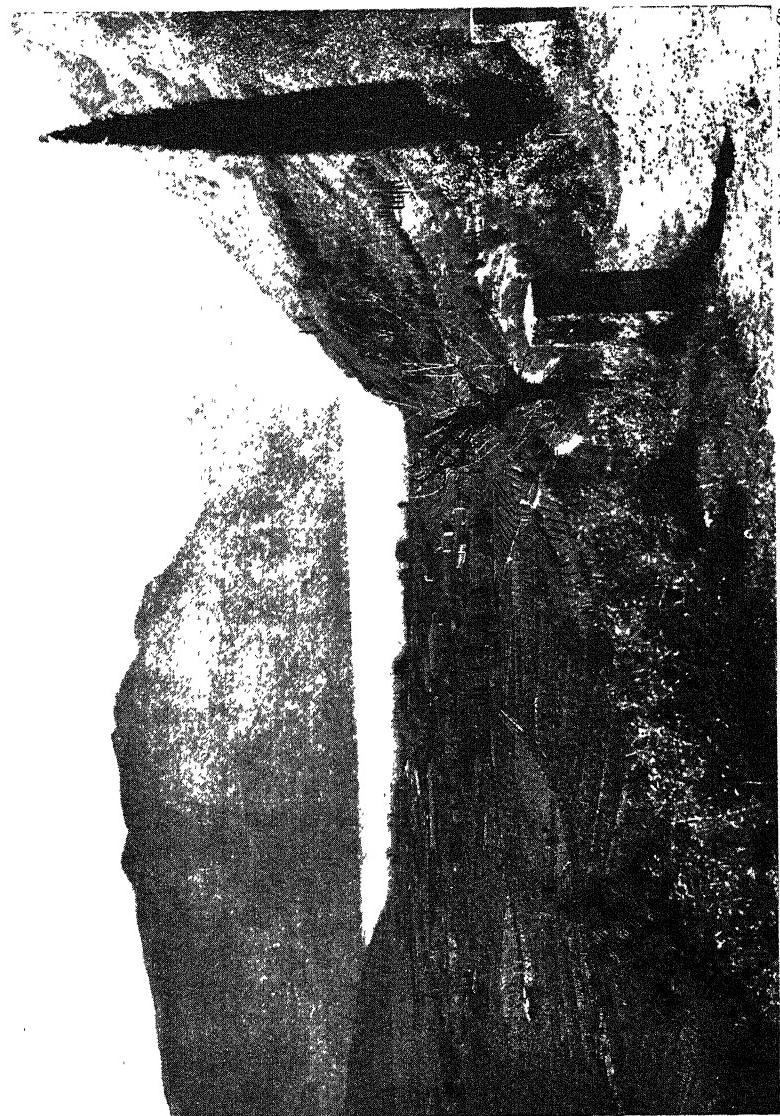


Photo from Keystone View Co.

Fig. 266.—An Alpine valley on the shore of Lake Garda. The mountains, lakes, and flower-carpeted valleys of northern Italy attract tourists from all parts of the world.

laws was used in all parts of the Empire and thus became the law of the greater part of western Europe. Even to-day the laws of France, Germany, Italy, Spain, and Portugal are based on the ancient laws of Rome. The laws of Great Britain are also in part founded on those laws.

The countries of the western hemisphere settled by the Spanish and Portuguese adopted laws similar to those of the mother



Courtesy American Express Co.

Fig. 267.—Ruins of the Roman Forum. Here the Romans discussed questions of public interest and held their courts of justice. Thus they developed the Roman laws, which have been followed in many parts of the world.

countries. Therefore, the laws of Latin-American nations closely resemble those of ancient Rome. The laws of our states and of our Federal Government, being based on English laws, are likewise influenced by Roman law. Thus Rome has influenced the laws of all the progressive countries of the world.

The influence upon language. When you study Latin in high school and college, you will learn that Latin was the language of the Romans. French, Spanish, and Italian are called Romanic languages because they had Latin as their foundation, or beginning.

The western hemisphere south of the United States is known as Latin America because the languages spoken in those countries with few exceptions are Spanish or Portuguese, both Romanic languages. Latin was the official language of the Church. Therefore with the spread of Christianity the Latin language, or at least Latin words, was introduced into other countries.

The influence upon music and art. We are also indebted to the Italians for some of the best music that has been written.



Courtesy American Express Co

Fig. 268.—This is St. Peter's, the largest Christian church in the world. It is closely associated with the Vatican, the residence of the Pope. Many Italian artists and architects aided in the construction of the church by making plans and models. The dome was designed by the great Italian artist, Michelangelo.

Italian operas sung in all of our larger cities are enjoyed by thousands of music lovers. Some of the best singers heard in America are Italians. Noted Italian singers appear in the large cities of North America, South America, and Europe.

The works of Italian painters are known even better than those of Italian musicians. Italians also hold a very high place in architecture and sculpture. Many of the buildings of Italy are noted for their beauty. Tourists are always eager to see the churches, public buildings, and ruins of Rome (Fig. 268), Florence (Fig. 269),

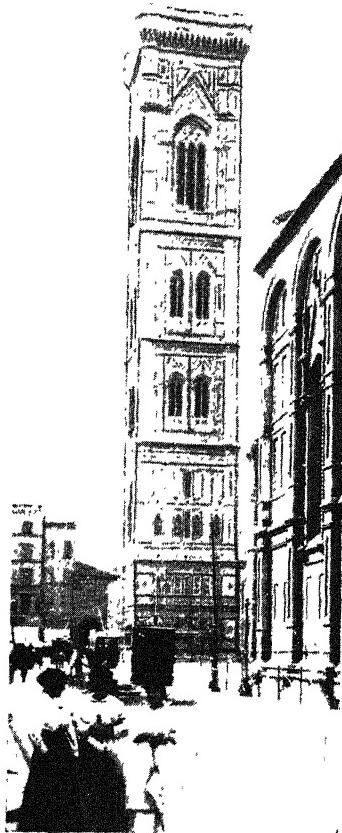
Venice, and other cities. American architects often visit Italy to study the architecture of its many fine buildings and gardens. For this reason we find many of the finest American homes and public buildings resembling those of Italy. Many parks and private grounds are also patterned after Italian gardens.

Italy has reason to be proud of her great sculptors and painters. Paintings and reproductions of paintings and sculpture, the work of Raphael, Michelangelo, Da Vinci, and others are found in art galleries the world over. Tourists flock to the churches and art galleries of Italy to view the work of the great masters.

ITALIAN OCCUPATIONS AND TRADE

Italy in the days of Columbus. We have seen that the early inhabitants of Italy were the most influential people of their time. This was because the Roman Empire controlled the whole civilized world and because Rome, the seat of government, occupied a central position in the Empire. Italy was also situated in the very heart of the commercial world.

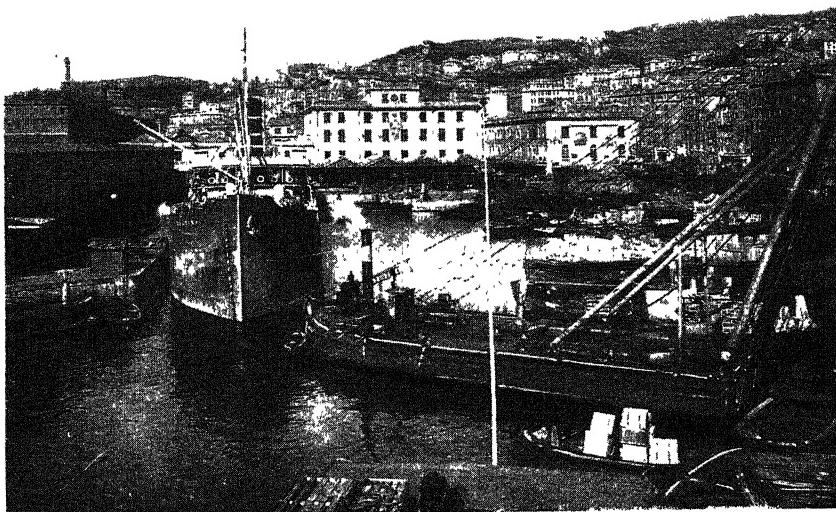
At the time of the discovery of America, Venice, Genoa (Fig. 270), and other cities of Italy were the world's most important commercial cities. Your history tells you that, as a boy, Columbus sat on the wharves at Genoa and watched the ships as they returned from their voyages to distant ports. Doubtless it was the knowledge gained from the seamen of Genoa that later led him to make his voyages of discovery.



Courtesy American Express Co

Fig. 269.—A beautiful tower in Florence. The Italian love of the beautiful is expressed in architecture, sculpture, paintings, and in the fine quality of many of their manufactured articles. Have you seen any of these or reproductions of them?

The merchants of Venice were more influential than those of any other city. They traded with all countries known at that time. Caravans brought silks, valuable spices, dried fruits, camphor, and oils from India, China, or Africa to the eastern and southern shores of the Mediterranean Sea. The goods were then taken by Italian ships to Venice or some other city of Italy.



Courtesy National City Bank, N. Y.

Fig. 270.—A portion of the harbor of Genoa. This city and Venice have been the leading ports of Italy since before the days of Columbus. Goods brought to Genoa by ship may be forwarded to central and northern Europe by rail.

From these cities they were sent to all parts of western Europe. In exchange the countries of western Europe sent to Italy lumber, furs, wool, and cloth.

Besides the products of other countries Italians sold valuable products of their own. Venice has long been known for its fine glassware, beautiful pieces of which may be seen in our large art museums. Italians were among the first to manufacture paper. Silk and silk goods were also products of the country. Besides these rich products salt and fish were exported. Italy's

most important trade, however, was carried on between western Europe and India.

As a result of the extensive commerce of the fourteenth and fifteenth centuries, great business houses developed. One of these large houses is said to have had as many as one hundred fifty agents in different parts of Europe. Some of the business methods then used have been handed down to us. Double-entry bookkeeping was first used by the business men of Italy at this time and was formerly called the Italian method of bookkeeping. Bills, notes, and checks so commonly used to-day also came into general use at this period.

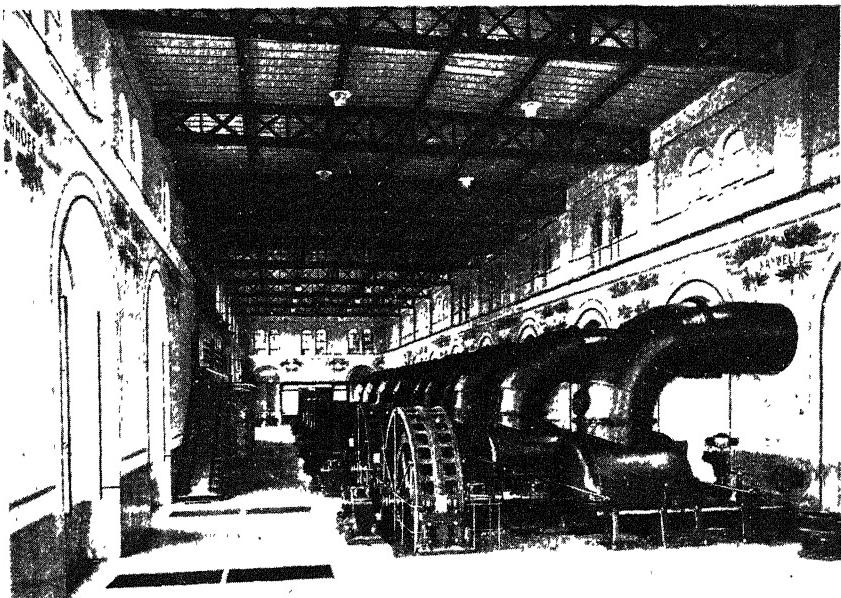
Why Italy does not hold first place to-day. Even to-day Italy is considered one of the great powers. Her influence, however, is much less than that of the United States, Great Britain, or France. Her position is no longer the center of the civilized world. The most important routes of trade and travel no longer center in the Mediterranean Sea. The settlement of the Americas by Europeans and the development of the resources of the western hemisphere have brought about great changes. The trade routes of the Atlantic Ocean have now become greater than those of any other body of water. Northwestern Europe is richer in natural resources than southern Europe. For these reasons Italy's position is not nearly so favorable as it was when the Mediterranean Sea was the center for nearly all the world's trade. Italy has few foreign possessions. The most important is that of Libia in northern Africa.

Coal and iron. Italy has no coal and her deposits of iron ore are not of great importance. Thus Italy finds it much more difficult to carry on manufacturing than countries like the United States and Great Britain, which have large deposits of coal and iron. Italy's commerce is also less than that of the other great powers mentioned. Since her manufactures are less, she needs to import less raw material and foodstuffs and has a smaller amount of manufactured goods for export.

Substitutes for coal. The coal used in the country must be imported and is therefore expensive. Italy is fortunate, however, in having many mountain streams which supply her with "white

coal," as water falls are sometimes called. The water power of the north is being used more and more to supply the power for Italy's mills. Water power is used to generate electricity (Fig. 271), which is carried by wires to the cities, where it is used for heating and lighting, and for power to run the mills and factories.

Agriculture, the leading industry. On the whole Italy is a mountainous country. In the extreme north are the snow-



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

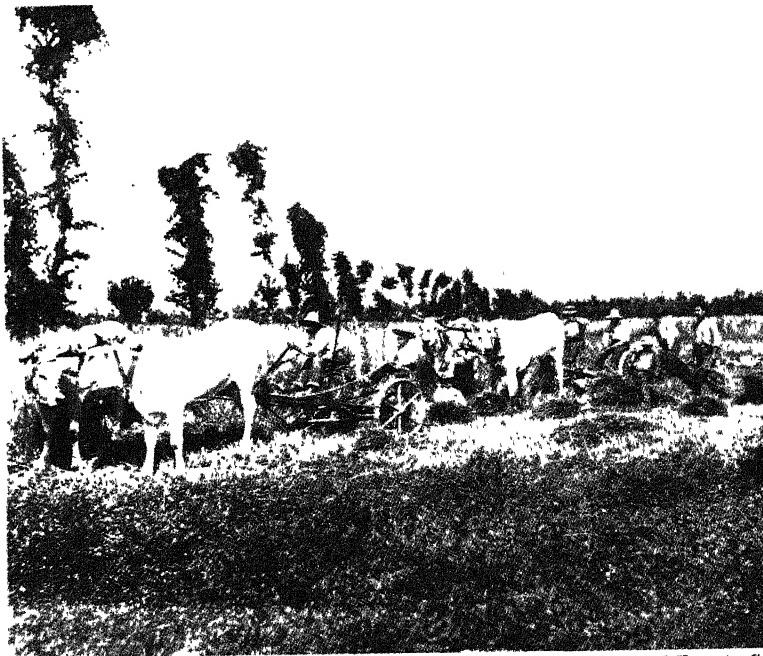
Fig. 271. — Interior of an electric power plant in northern Italy. The swift mountain streams of this section are of great value to a country that has no coal.

covered Alps, while the Apennines extend the whole length of the peninsula. The level areas are limited to the Po Valley and the small plains bordering the coast. Its area, including Sardinia and Sicily, is less than that of California, but it has more than one-third as many people as the whole United States.

In spite of Italy's many highlands, farming is the leading occupation (Fig. 272). Although more than half of the people are engaged in farming the country cannot, of course, produce

all the food needed. Large quantities of wheat and meat products are imported. Some foodstuffs, such as eggs, cheese, vegetables, and fruit, are produced in quantities sufficient for export.

Agriculture in the north. The Po Valley is the richest agricultural region of Italy. The low, level land has been formed by fine sediment brought down by streams from the mountains.



Courtesy of the International Harvester Co.

Fig. 272.—Harvesting wheat on the rich farming lands of the Po Valley. This valley has not only extensive plains but also a considerably heavier rainfall than southern Italy, thus making it the most important agricultural section of the country.

Although northern Italy receives a good supply of rain, farm lands are irrigated throughout a large part of the Po Valley. The gently sloping land and the abundant supply of water brought by rivers from the lakes and glaciers of the Alps make it easy to distribute water over the land. Irrigation not only gives the plants a plentiful supply of water, but the sediment brought in by the water also furnishes plant food.

Large crops of corn, wheat, and rice are raised in the Po Valley. Polenta, a dish made of corn meal, is a favorite food of many of the people of this northern section. Italy is the only country of Europe in which rice is raised in large quantities. Rice is grown on the irrigated lands in the western and central parts of the Po Valley and on the low swampy lands near the mouth of the river. More rice is eaten by the people of Italy than by the people of any other country of Europe. Italy imports rice so that she can export some of her own, which is in great demand because of its excellent quality.

Agriculture in the peninsula. South of the Po Valley the greater part of the rain falls in the winter, when the westerly winds have shifted southward. The summers have little rain because the peninsula is then in the dry trade-wind belt. Therefore in the growing season it is necessary to irrigate the farms by means of streams flowing from the mountains. Fortunately, mountains extend throughout the entire length of the country. The rain falling on them not only supplies the rivers but waters the pastures on the higher slopes. Since the amount of rainfall in the peninsula is small, the pastures provide less grass for live stock than in well-watered countries. For this reason we find in Italy many mules and goats, for these animals thrive better than horses and cattle in places where grass is not abundant. Much of the milk used in the country is obtained from goats. These animals are driven from house to house and milked into the family pitcher at the doors of the customers. In this way the buyer is sure of getting fresh milk. Parmesan cheese, a product of northern Italy, is made of goat's milk. This cheese is noted for its excellence and is sent to other countries.

Grapes and wine. More wine is made in Italy than in any other country of Europe. If we could visit the vineyards, we should be interested to see how carefully all the land is utilized in planting the vines. On the hillsides the farmers carefully build terraces to provide level land for planting and to prevent the soil from being washed down the slopes by the rain. In the vicinity of Mt. Vesuvius the soil formed by the decomposed lava is very rich. Much wine is consumed in Italy, and a great deal is ex-

ported. As in France the best wines take their names from the places in which they are made.

Olives and olive oil. In our study of southeastern France we learned that the raising of olives in that part of the country led to the development of the great oil industry of Marseille. Olives are raised not only in France but in nearly all lands bordering the Mediterranean Sea (Fig. 273). Olives and olive oil supply an important part of the food of the people of these regions.



From The Geography of the World's Agriculture.

Fig. 273. — The chief olive producing regions of the Mediterranean countries.

Some of the fruit is picked while still green and is preserved by pickling. In our country we use pickled olives only as a relish, but in many of the Mediterranean lands they are an important part of the food of the people. Ripe olives are eaten while fresh or are pickled.

Olive oil is obtained in much the same way that cider is made from apples. The fruit is crushed and the pulp thus obtained is placed in flat bags of loosely woven material. The bags are placed one upon another and the oil is slowly pressed out. The oil which first comes from the press is the best, and is known as virgin oil. The oil last obtained from the pulp is unfit for food but is used in lamps and for making soap.

In Italy olives are raised in largest quantities in the central and southern parts of the peninsula. The best fruit, however, is raised in the extreme northwestern part of the country in the Riviera (Fig. 274) and near Florence. Much of our best oil comes from Lucca, a town near Florence.

The olive trees are raised from seeds and begin to bear fruit in about three years (Fig. 275). The tree may live and bear fruit



Courtesy Italian Railway.

Fig. 274.—A portion of the Riviera near which olives are raised. This beautiful rugged coast of the northern Mediterranean lies partly in France and partly in Italy. From all over the world people come here during the winter months for health and pleasure and to enjoy the beautiful scenery.

for hundreds of years. The lands bordering the Mediterranean receive only small amounts of rain, and much of this falls in the winter. Thus there is a scant growth of grass in the pastures, and the supply of milk and butter is small. But the olive tree thrives in these lands. The fruit of this tree supplies olive oil, which is widely used in place of butter.

Italy exports more olive oil than any other country. The greater part of that which is exported goes to France, which needs

more oil than it produces. In recent years the United States has imported from Italy about five million gallons of this oil per year. We import about four times as much from Italy as from either France or Spain.

The manufactures of Italy. The chief manufactures of Italy are in the northern part of the country. It is there that the large textile mills are located. The region has several advantages.



Courtesy H. J. Heinz Co.

Fig. 275.—One of the large olive groves which are common in the countries bordering the Mediterranean Sea. These men are gathering fruit to be sent to the United States. American companies own large factories in these regions for packing olives and for preparing olive oil.

As we have seen, the rivers flowing from the Alps furnish power. Moreover, nearness to the countries of central Europe makes it easy to send manufactured products to those countries. Skilled workers have also come from neighboring countries to find employment in the mills and factories of northern Italy. The Po Valley itself is densely populated and thus supplies an abundance of labor for the industries. Since this is the richest farming

region of Italy, food for the workers and raw materials for the mills are obtained here more easily than elsewhere.

Silk and its manufacture. No other country of Europe produces or exports so much raw silk as Italy. Mulberry trees grow in many parts of the country, but the most silk is produced in the Po Valley, where the climate is well adapted to its production. The Alps ward off cold winds from the north, and the winds from the surrounding waters are always warm. The Po Valley with its dense population furnishes many workers for the silk industry. Not all the raw silk is sent out of the country; a great deal is manufactured in the cities of northern Italy. Milan, Como, and Florence are the chief cities engaged in this industry.

Cotton goods. Besides silk, cotton is manufactured in this northern section. The greater part of the raw cotton comes from the United States, but some is also imported from Egypt and India. The products of Italy's cotton mills are not of the highest grade, but they are constantly improving. The cotton goods exported are sent mainly to Turkey and to Argentina and Brazil, where Italian emigrants who have gone to South America demand Italian goods such as they used before leaving the mother country. The women make beautiful lace and embroidery. Point lace was first made in Venice. If there are Italian pupils in your school, they probably have at home laces or embroidery which their mothers or grandmothers made before coming to this country.

Macaroni. Macaroni is a favorite dish of all Italians, both rich and poor. We Americans are also fond of macaroni. We import millions of dollars' worth each year. Some of the macaroni is made in the Italian homes by simple methods. Much is made by large machines driven by steam. It is made of wheat flour to which boiling water is added. The dough is thoroughly mixed, after which it is forced through cylinders having many holes in one end. As the dough is forced through the openings, it takes on the forms which we know so well. After being carefully dried, it is packed and sent to market. Much wheat is necessary to make all the macaroni produced in Italy. The best wheat is raised in the central part of the peninsula east of

the mountains. Italy does not, however, raise nearly enough wheat for her own use. It is imported from Russia, Argentina, and the United States.

Straw does not go to waste. In America the straw which is left after the wheat is threshed is looked upon as having but little value. It may be pressed into bales and sold as litter for stables or it may be considered of so little value that it is disposed of by burning. In Italy, on the contrary, much of the straw as well as the grain is valuable. Some varieties of wheat have straw of excellent quality. This straw the Italians have become expert in plaiting, thus forming braids from which straw hats are made. Leghorn and Milan hats are well known in this country. In the United States there are straw-hat factories employing many women and girls. Some of the straw braid used in making the hats is imported from Italy. In recent years, as we shall learn in our study of China and Japan, the straw braid industry of Italy has been obliged to compete with the cheap labor of the countries of the Far East.

Many products valued for their beauty. Many of the manufactured products of the country are valuable because of the fine taste and skill exhibited by the people who made them. It is products of this kind which make up a considerable part of the exports of the country. Several manufactures of this type have already been mentioned. Among them are the glassware of Venice, the laces and embroideries made by Italian women, and the straw braid of Leghorn and Milan. Other materials from which Italians produce articles of beauty are coral, leather, stone, and alabaster. Along the coast of Italy a red coral is obtained by divers or by the use of dragnets. Some of the finest pieces are worth several hundred dollars per ounce. This coral is finely carved to make beads, necklaces, and other ornaments. Ornaments are also made from shells which are found along the shores. Many of these articles are sold to tourists who wish to have them as souvenirs. Near Carrara, a town situated about halfway between Florence and Genoa, a beautiful white marble is quarried. No other country provides a better quality of marble for making statues and other forms of sculpture. The statues

made by Italian sculptors owe their excellence in part to the fine quality of their marble.

The fewer resources that a country has, the greater is the necessity for producing from a small quantity of raw material the most valuable products possible. This can be done only by making those articles which require for their manufacture much highly skilled labor. It is in this way that the Italians, by the use of fine taste and skilled workmanship, try to make the most of the resources of the country.

Italy's trade relations. Foreign trade is largely with the other countries of Europe (Fig. 276). Food products and raw

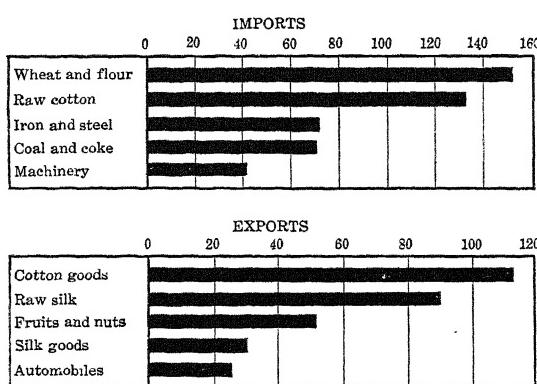


Fig. 276.—The chief imports and exports of Italy for 1925 in millions of dollars.

silk exported from the Po Valley are sent mainly to the countries of central Europe through the passes and tunnels of the Alps. Genoa, Milan, and Venice are the trade centers of northern Italy. Genoa is the leading port. Goods brought by ships to this city are sent by rail to

ports of northwestern Italy and through the passes and tunnels in the Alps to central Europe. Milan is the chief manufacturing and trading city. Like Genoa this city has a large trade with countries to the north. Its position near the center of the Po Valley brings to it much of the trade of northern Italy. Venice is the chief port of the Adriatic Sea. It has the trade of the eastern part of the Po Valley. Naples is the largest city of the country (Fig. 277). It is to this port that the greater part of the imports of the country are brought. The cities Trieste and Fiume on the eastern side of the Adriatic are now Italian ports. The chief imports which Italy receives from the United States are wheat, meats, and cotton. She sends to us

raw silk, cheese, macaroni, lemons, sulphur, and many other articles of less value.



Courtesy American Express Co

Fig. 277.—Fishing in the vicinity of Naples. Many of the people living along the shores of Italy are engaged in fishing. The thousands of men employed in the industry are not able, however, to provide the country with all the fish needed. More than \$100,000 worth of fish is imported each year.

SWITZERLAND

A land suitable for grazing. The mountains of Switzerland have a great influence upon the people in times of peace as well as in war. Because of the very rugged surface of parts of the country we find most of the people living on the plateau which lies between the Alps of southern Switzerland and the Jura Mountains of the northwest. The hilly and mountainous surface (Fig. 279), together with a plentiful supply of rain, makes grazing an important occupation. The dairy products of Switzerland are well known. Doubtless you have eaten Swiss cheese and Swiss milk chocolate. These products and condensed milk are sent to many other countries.

The Swiss, skilled workmen. Although agriculture is an important occupation, the greater number of people are engaged in manufacturing. The Swiss are noted for their industry and



Fig. 278

skill. Formerly manufacturing was done largely by hand in the homes. To-day there are thousands of factories turning out silk and cotton goods, embroideries, watches, shoes, and other products. More and more the power used is electricity generated by the many mountain streams flowing from the glaciers. The power of her mountain streams is one of Switzerland's greatest resources.

The chief industry of western Switzerland is the manufacture of watches, clocks, and jewelry. Watches are now made by thousands in large factories, as they are in the United States. There are more than twelve hundred watch factories in the country, in which over 46,000 people are employed. Geneva is the chief center of this industry. Watches have been made here for more than three hundred years. For the Swiss watch has long been known the world over.

Switzerland also has a large textile industry. The products include silk goods, cotton goods, and embroidery. Fifty years ago all the silk was woven on hand looms. Now it is nearly all done by power. Zurich is noted for its silk and cotton mills. Basel is the center of the manufacture of silk ribbons.

The country also has a number of shoe factories, the products

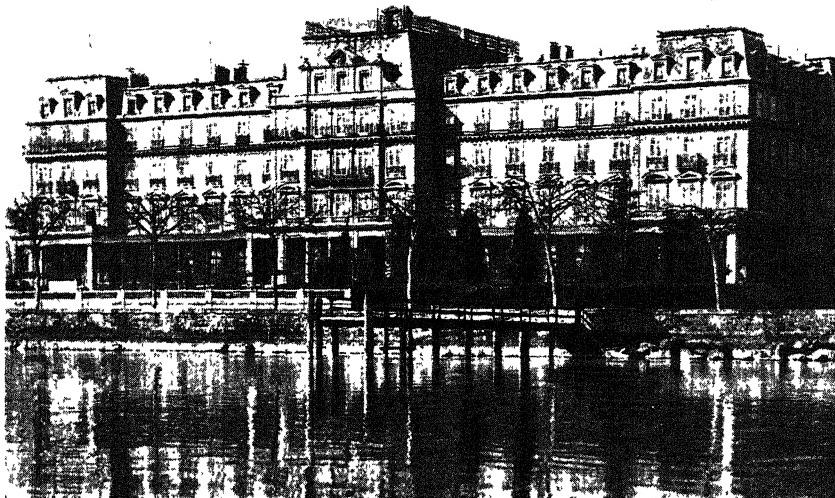


© Underwood and Underwood.

Fig. 279.—The farmhouse and hotel in this little Swiss village suggest the two occupations possible at this great height, grazing and the entertainment of travelers. Can you tell why each occupation is carried on?

of which are not only sold in the home markets but sent to foreign countries as well.

Most important raw materials. The rugged surface, the cool climate, and the limited area of the country make it necessary for Switzerland to import much of its raw materials for manufacture. Cotton comes from the United States and Egypt, raw silk from Italy and France, and metals largely from Germany.



© Ewing Galloway.

Fig. 280.—“Palais de Nations,” the home of the League of Nations in Geneva, Switzerland. Why was a city of Switzerland chosen as the meeting place of the League?

Trade over and through the mountains. The high mountains make transportation difficult. To make trade and travel easier a number of tunnels have been constructed through the Alps. The tunnels of St. Gothard and Simplon are most noted. Although the mountains are hard to cross the electric power generated at the falls of the mountain streams is used to propel the trains. More and more the roads of the country are being elec-

trified. As Switzerland continues to harness her streams it will be necessary to import less coal.

A tourist land. One of Switzerland's greatest assets is her scenery. From all parts of the world visitors come here by thousands to enjoy the beauty of mountains, valleys, glaciers, streams, and lakes. The entertainment of these visitors gives occupation to a large number of Swiss people. The money brought into the country by tourists constitutes a large part of the country's income.

A world capital. Switzerland has a peculiar interest for all nations, for it is there that meetings of the League of Nations are held (Fig. 280). It was thought that in a country that did not take part in the World War all questions might be fairly discussed. Meetings of the League are held at Geneva. That city is sometimes referred to as the capital of the world.

QUESTIONS AND PROBLEMS

1. What do you think you would find most interesting if you were to visit Italy?
2. What evidences of the influence of Italian art and learning can be found in this country?
3. In what ways have Roman laws been a benefit to the whole world?
4. Latin is no longer spoken by the people of Italy. Why, then, is this subject studied in nearly all the high schools of our country?
5. What parts of the world did Columbus probably learn about as he talked with the sailors of Genoa? What products of foreign lands did he become acquainted with?
6. Why is Italy's location less advantageous than in the days of Columbus?
7. Italy is not an important manufacturing country. How do you account for this fact?
8. How does the agriculture of northern Italy differ from that of the southern part of the country? What are the causes of the differences?
9. Why is the olive crop a very important one for the people of Italy?
10. How are the fine taste and skill of the Italian people shown in some of their manufactures?
11. Why do Swiss manufactures consist very largely of goods of fine quality?
12. State the different ways in which the mountains of Switzerland add to the prosperity of the country.

SUGGESTED PROJECTS AND EXERCISES

1. Outline "My Trip to Italy" by using a wall map or by making a desk map to show all harbors, rivers, cities, mountains, and lakes of Italy that you would visit, and tell or write something interesting about each place visited.
2. Collect from newspapers all clippings of steamship sailings from American ports to Italian ports.
3. Find all pictures or statuary by famous Italian artists in your school, home, and library.
4. Find as many Italian songs as you can in your music books; among your phonograph records. Make a list of famous Italian opera singers.
5. Make a collection of pictures of beautiful churches, museums, art galleries, and famous buildings of Italy.
6. Make a plasticene map of Italy. Show mountains for quarrying and sources of rivers used for power and irrigation. Show plains used for farming.
7. Make a commercial map of Italy by printing on an outline map of the country (1) in regions where produced the names of the products exported, and (2) outside the country, near the ports, the names of articles imported.
8. On an outline map of the world trace old caravan routes from India and the Far East to the Mediterranean Sea. Thence ship routes to Venice and Genoa.
9. Prepare a class exhibit of articles coming from Italy.
10. Make a list of the Swiss products sold in the United States.

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CHAPTER XXIX

RUSSIA, OLD AND NEW

What Russia includes. Russia is a country of vast territorial extent. It stretches from the frozen reindeer country of the north to the camel country on the hot and arid shores of the Caspian Sea. While the country is not densely populated, the area is so great that many millions find their homes upon its extensive plains. If territory and population alone can make a mighty nation, then Russia is surely great. We shall see, however, that a nation's greatness depends upon other things as well as these.

The country of Russia includes Siberia and other Asiatic possessions. This is a territory more than twice as large as the United States and embraces one sixth of the land surface of the earth. While Siberia is cold in winter, it is warm in summer and consequently is an agricultural country of considerable promise (Fig. 281). Its population, though small for so large a territory, is steadily increasing.

In this chapter we are to study mainly about European Russia. This is by far the most important part. Study your map (Fig. 159) to see what an extensive country it is.

How Russia has struggled for territory. This vast domain has come to Russia as a result of long years of struggle and conquest. The nation began in the kingdom of Muscovy near Moscow. This part of the country, with Moscow as the capital, is still its governing center. At first Russia had no seaports. If Russia was to become a great nation, she must have harbors. These could be obtained only through conquest. Peter the Great was the first to attempt this conquest on a large scale. You will be interested to read about the life of this remarkable man. Gradually Russians won their way to the shores of the

Baltic and White seas toward the northwest, to the Black Sea on the south, to the Pacific on the east, and finally became the temporary owners of Alaska in our own continent. They have reached far to the south into Persia toward the Persian Gulf and Arabian Sea. Great Britain has opposed any further advance by any nation in that direction, as she feels that her Indian possessions may be thus endangered. The Baltic and



© Brown Bros.

Fig. 281.—Siberian farmers using an American harvester. Scenes like this are common in the "black earth" country of southern Russia (Fig. 166), but we are surprised to see so much grain raised and so much agricultural progress in the cold and rather dry Siberian country.

White Sea ports are icebound during many weeks in the year. This is a serious drawback to commerce. The Black Sea is connected with the Mediterranean by the narrow Bosphorus and the Dardanelles. These are strongly fortified and not under Russia's control. For these reasons she has been extremely anxious to obtain open ports upon the Pacific and Indian oceans. At one time she held Port Arthur (Fig. 313), on the coast of China, which is ice free. As the result of her defeat in the war with Japan she had

to give up this much coveted port. She still holds Vladivostok, farther to the north.

What territory was lost during the World War? Consult a map of Europe as it was at the beginning of the World War. Compare Russia's present territory (Fig. 296) with that of 1914. Much that Russia struggled for so long and obtained at heavy cost has been given up. During the war several of her conquered provinces declared their independence and set up governments of their own. These constituted about fifteen per cent of European Russia. Most of these have been recognized by other nations and their rights secured by treaties. Can you determine what territory was thus lost to Russia? Perhaps you can make a map showing this.

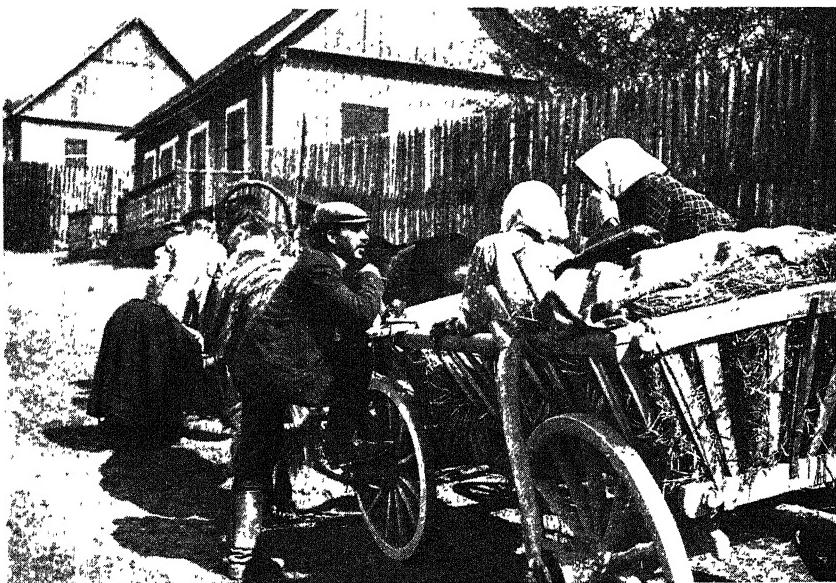
Why Russia is a backward nation. Russia has lagged far behind the nations of western Europe in civilization and government. If we are to understand the reasons for this backwardness, we must learn about the people themselves and the land in which they live.

The Russian people. Many races. The people of Russia belong to many races and speak many different languages. This is quite different from France, Germany, or Great Britain. Many of the people have come from the great plains of Asia and many from other parts of Europe. Most of the Russians belong to the branch of the white race known as *Slavs*. Russia is looked upon as the great Slavic nation of the world.

Serfdom. Fully three-fourths of Russia's people are tillers of the soil. Until recent years many of the peasants were held as serfs or slaves upon the farms that they cultivated. They could not be sold away from the farm as slaves were, but were regarded as a fixed part of it. At about the time that our slaves were emancipated, these serfs were set free (1861-1866). They were given the right to occupy farms and, by making regular payments, finally to become owners of them.

Poverty. Even after their emancipation the peasants were given few rights, and great poverty prevailed among them. Their homes were often simple straw-thatched huts of one or two rooms (Fig. 282), and their food was of the simplest kind. There is still great poverty among these people as a whole.

Lack of education. Little provision is made for the education of the common people. Not half of the boys and girls in the country districts ever go to school at all. In the days of the Empire, schools and universities existed for the wealthy classes, but these were under strict government control. They were allowed to teach only what the government approved. The educated leaders came from the nobility and the wealthy classes.



© Ernest Peterffy.

Fig. 282. — A scene in a Russian village. The houses are simply built and the farm wagon is home-made. Women as well as men work upon the farms. Why do Russian peasants live a simpler life than that of the American farmer?

It is said that New York City alone spends more money for her schools each year than all of Russia. It is not strange, therefore, that the mass of her people are illiterate.

Government. Nearly up to the time of the World War the government was an *absolute monarchy*. The ruler was the czar, and his word was law. The people had no voice whatever in any matter relating to their government. While the nation was engaged in the World War, the Russian soldiers and workmen.

being then well armed, rebelled against their rulers, assassinated the czar, and set up a government of their own.

The climate of Russia. The temperature ranges from frigid in the north to warm temperate in the south. The central and more easterly parts are regions of hot summers and cold winters. In nearly all parts of the country rainfall occurs in sufficient quantities for agriculture (Fig. 165). The region about the Caspian Sea is arid. More rain falls in the west than in the east, and droughts are more frequent in the east. Can you account for these facts?

Natural regions. If we were to travel from the Arctic Ocean to the Caspian Sea, we should pass through the three great natural regions of Russia. These are the tundras, the forest area, and the grasslands. The tundras are the frozen plains of the far north where a few Samoyeds and Lapps live with their herds of reindeer. Only mosses, lichens, and stunted shrubs grow here. Commercially this is not an important area. The great forest belt lies south of the tundras. Here is a forest of marvelous extent (Fig. 293). It reaches all the way across Russia and Siberia to the Pacific coast and is one of the most extensive forest regions of the world. In the deeper parts are found the many fur-bearing animals for which Russia is noted. As we go southward in the forest belt, we find more and more of the land cleared for farming. Just south of the forest belt are the grasslands containing the noted "black-earth" region. The important province of Ukraine lies in this district, often called the granary of Russia. To the extreme southeast are the arid steppes, which resemble the arid lands of our own country.

Agriculture. The far north is too cold and the far southeast too arid for profitable farming. Between the two extremes, however, is a country of great and varied agricultural wealth. Russia as a whole is a plain of vast extent. What mountains she has are on the borders. There are the low Urals on the east and the lofty Caucasus on the southeast. The great plain nowhere rises above 1200 feet. The highest portion is in the center, but this is level and would give no one the impression of a mountainous country. The soil of the plain is

generally good. In the "black-earth" country of the south it is excellent, being much like that of our prairie region (Fig. 166). The great area, good soil, favorable climate, and level land make it possible in normal times for Russia to produce much food for herself and her neighbors.

The methods of farming have been and are still very crude. Much of the land is unwisely cultivated. The level lands are

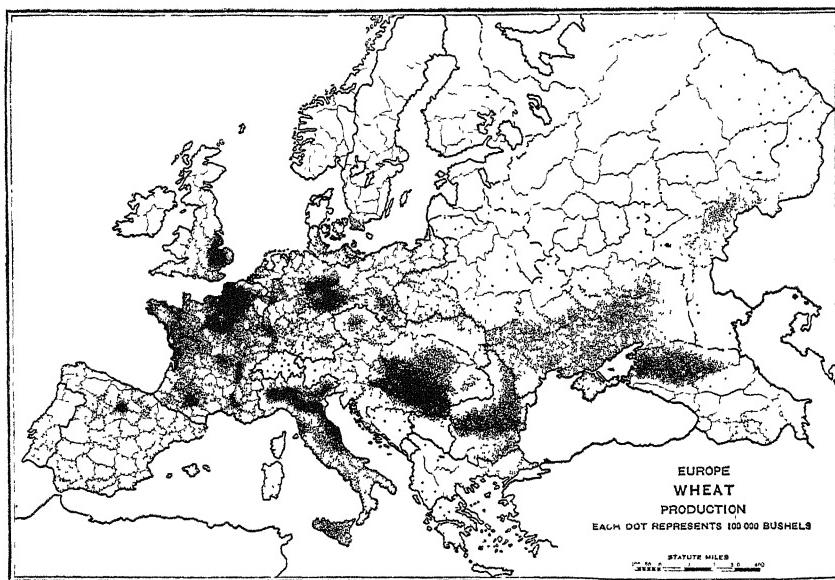


Fig. 283.—Russia is the largest wheat-growing and wheat-exporting country in Europe. Both spring and winter varieties are grown. Russia ranks second to the United States in the production of wheat.

well suited to the use of modern farming machinery, but most peasants are too poor to purchase it. Russia, however, is beginning to learn its use, and America has furnished much of this machinery (Fig. 284). With the use of improved methods in agriculture Russia should be able greatly to increase her production.

The principal crops are rye, oats, wheat (Fig. 283), hemp, barley, potatoes, sugar beets, and flax (Fig. 285). Half the rye of the world is produced in Russia and more farm animals are raised here than in any other country of Europe.



Courtesy International Harvester Co.

Fig. 284.—American mowing machine drawn by camels in eastern Russia. In southern Russia horses are generally used for such work.

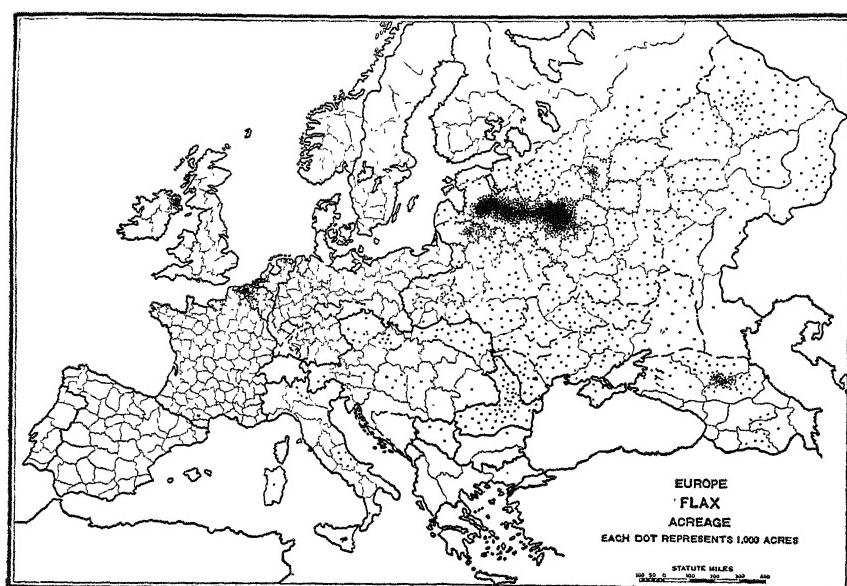
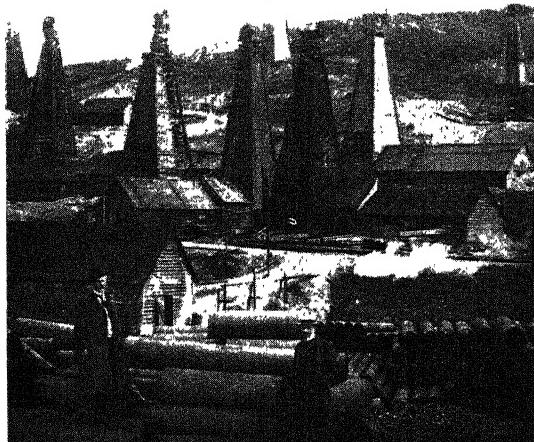


Fig. 285.—Russia is the largest flax-producing country of the world.

Minerals. *Petroleum.* The richest oil fields of Europe are in the vicinity of Baku in Azerbaijan, a part of Russia (Fig. 286). The export center for this region is Batum on the Black Sea. Baku and Batum are connected by rail and pipe line. This rich oil field has produced as high as a million barrels per day. Other areas are being developed in Russia north of the Caucasus Moun-

tains and on the shores of the Caspian Sea. The Baku oil is extensively used on the steamers of the Caspian Sea and Volga River. There are more than 1700 of these Russian steamers.

Coal and iron. The coal fields of Russia are said to be rich, although they are not so extensively worked as those of several other European countries. At the outbreak of the World War seventy-five per cent of the coal used in Russia was mined in the Donetz Basin just



© Underwood and Underwood.

Fig. 286.—Petroleum wells at Baku on the shores of the Caspian Sea. Some of the Baku wells are among the richest in the world.

north of the Sea of Azof. Rich fields also occur west of the Urals and south of Moscow. Iron ore occurs in greatest abundance in southern and central Russia. Good deposits are also found in the Ural region.

Other minerals. Russia is also rich in gold, silver, copper, and platinum. For many years nearly all the world's platinum came from the Urals, but Colombia, in South America, now pro-

duces large amounts of this valuable metal. Platinum is now more precious than gold.

Lumber. The great forests furnish an abundance of valuable lumber for home use and export trade (Fig. 292). It is said that the forests are to Russia what coal is to England. Europe looks to Russia for a large part of its lumber.

Fisheries. Great quantities of fish are taken from the seas, lakes, and rivers. The fisheries of the salt Caspian Sea and its

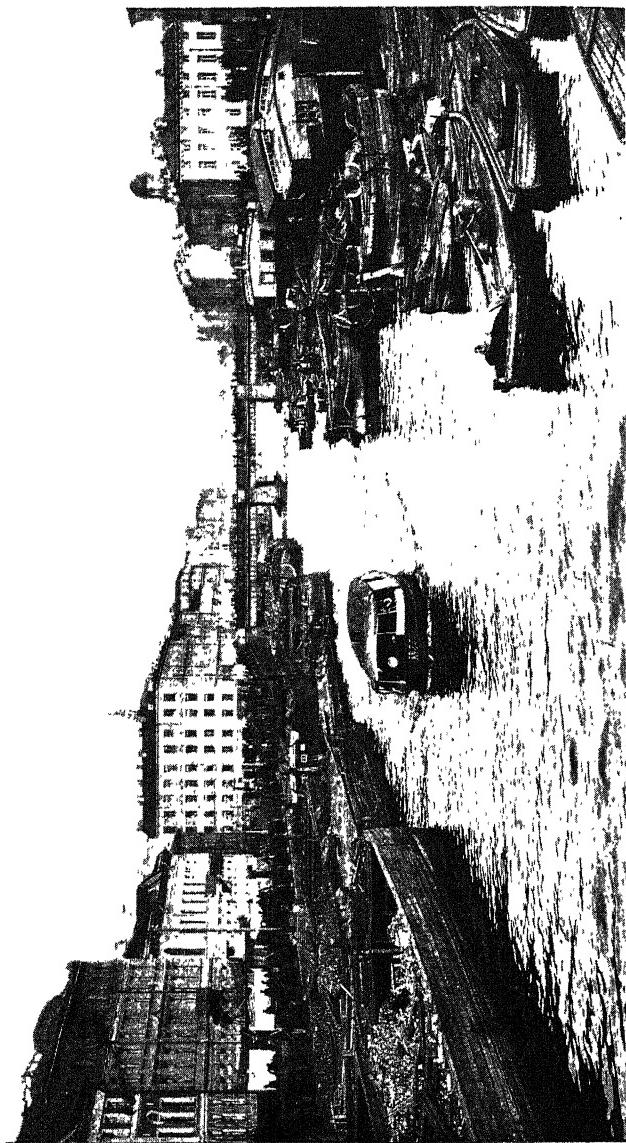


© Brown Bros.

Fig. 287. — Sturgeon are taken from the waters of the Caspian Sea and the Volga River. These large fish sometimes weigh a ton or even more. Hundreds of pounds of eggs are often taken from a single fish. These eggs are salted, packed in oil, and sold in America and other countries as caviar.

rivers are especially noted. The great sturgeon is taken from these waters in large numbers (Fig. 287). From the eggs of these fishes the famous Russian caviar is prepared. This is the most important fish product exported. It finds a ready market in the United States and Europe. Isinglass is made from the swim bladder of the sturgeon. This isinglass is said to be the finest in the world.

Manufacturing. Russia has been very slow in the development of her industries. This is not because she lacks resources



Courtesy National City Bank, N. Y.

Fig. 288. — Leningrad is built upon very low land at the mouth of the Neva and is a city of many canals. This picture of the Moika Canal shows us the large use that the city makes of these waterways. In winter the canals are frozen and are then of no use for shipping.

or cheap labor. Her lack of capital has been a great drawback. In 1891 steps were taken to invite foreign capitalists to come to Russia and help build up her industries. Much German, French, English, and American capital was invested. As a result the country began a very rapid industrial growth. In less than ten years more than 38,000 factories sprang into existence. Two and a half million men went into the factories and mines. Railroad building kept pace with the growth of manufacturing. Russia was passing through her industrial revolution just as the United States, Great Britain, and Germany had done so many years before. The World War greatly checked this important movement.

From her own raw materials she manufactures large quantities of linen, hempen goods, woolens, lumber, flour, sugar, leather, tobacco, metal goods, steel, and iron. Cotton, silk, and rubber articles are manufactured from imported materials.

Manufacturing centers. The four most important manufacturing regions are those of Moscow, Leningrad (Fig. 288), the Donetz Basin, and the Tula district. The Moscow center has several geographical advantages as a manufacturing area. It is in the central part of the country. Several of the important rivers rise near this point. These can be used to bring in raw materials and to carry out the manufactured articles. Coal can be obtained easily from the near-by Tula mines. In earlier days fuel was supplied from the near-by forests. It is a region of large population and near a good food-producing section. These facts combine to make Moscow Russia's most important manufacturing center. More than half the cotton, woolen, linen, silk, and velvet goods were made here previous to 1914 by the use of machinery as modern as that in use in the mills of the United States. Moscow manufactured much of the modern machinery used in the industries of the country. The Tula district, being one of the most important coal and iron regions, has naturally become an important center for the manufacture of iron and steel articles. These include cutlery, mechanics' tools, firearms, and many others. For this reason Tula has sometimes been called the Sheffield of Russia. Leningrad and Moscow are the two great textile centers. A considerable iron and steel industry has

developed in southern Russia in the Donetz Basin. The famous Russian leather is made in many parts of the country. Birch oil and bark are used in the process and give the leather its peculiar quality. Book bindings, pocketbooks, and bags are often made of this leather. Perhaps you have noticed its peculiar odor.

Manufacturing in the homes. Before the factory came, with its improved machinery, all the manufacturing was done by the



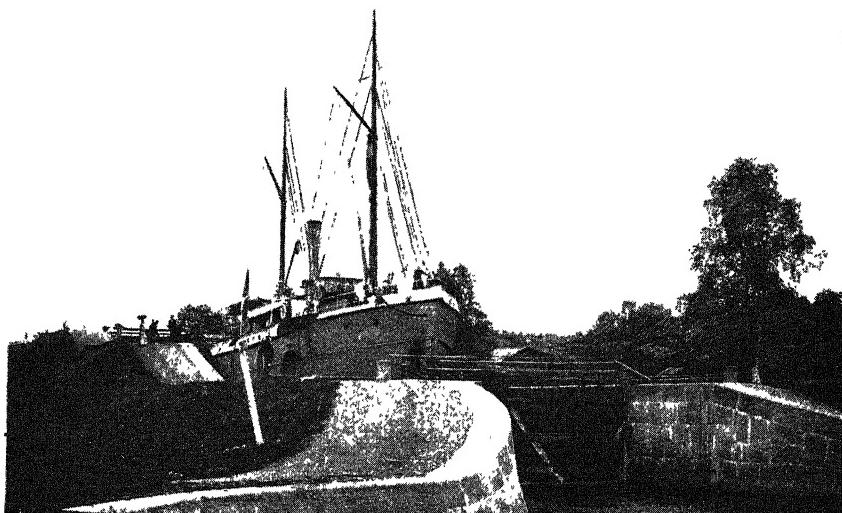
Photo from Ernest Peterfy.

Fig. 289.—Russian peasant women and girls making fishing nets as a home industry.

people in their homes. More goods are made in the homes today than in the factories (Fig. 289). This work is done by the peasants during the winter months and at other leisure times. The peasants are often highly skilled in their work. Villages often do a special line of work. One may manufacture barrels, another chairs, while a third may make only parts of an article, as the spokes or hubs of wheels. This employment in the long winter months is a great help to the peasants. It also adds much to Russia's producing power.

Transportation. *Highways.* Good roads, as we know them, hardly exist in Russia. Transportation of goods in country districts is therefore best provided for in winter by sledges, when the whole plain is covered with snow.

Rivers and canals. The rivers of Russia, flowing over the great plain country, are nearly all navigable for many miles. They are easily connected by canals. It is estimated that there



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 290. — This canal boat has been into the interior of Finland and is bringing a load of lumber out of Viborg on the Gulf of Finland through the Saima Canal. This canal connects the Gulf of Finland with Lake Saima. What kind of goods will be likely to be taken on the return trip? The water is allowed to run slowly out of the upper lock, thus letting the boat down to the level of the lower lock.

are about 50,000 miles of these waterways in Russia. Boats can go by river and canal (Fig. 290) all the way from the Caspian Sea to the Arctic Ocean or from the Caspian or Black seas to the Baltic.

Railways. There are over 35,000 miles of railway already built in Russia. This is not a great mileage for a country so large as Russia. How does it compare with that of the United States? The people have come to depend very largely upon the

railways. During the World War and for some time afterwards people outside the farming districts suffered greatly for want of food. This was partly due to the fact that the railways were out of repair, and it shows how vitally important these railroads have come to be. The great Trans-Siberian Railroad connects



© Burton Holmes, from Ewing Galloway.

Fig. 291. — The waterfront and warehouses of Nizhni-Novgorod at the junction of the Volga and Oka rivers. The town is famous for the great Russian fair held here every summer. Most of the freight is brought to the town on river steamers like those shown in the picture. Most of the Russian rivers are frozen in winter. This is one reason why there is much overland transportation by sledges in winter.

Leningrad and all Europe with the Pacific coast. The building of this road was begun in 1891 and completed in 1902. Through trains can now run from Paris to Peking, thus greatly shortening the time required before the road was built.

Russian fairs. For many years before the railroads came, merchants and producers brought their goods together at central

points for sale or exchange. This was done at fixed times of the year and at definitely appointed places. These gatherings were known as *fairs*. They are still held at several different points, but the one at Nizhni-Novgorod is the most famous (Fig. 291). It is said that goods to the value of \$35,000,000 change hands annually at this one fair. These fairs are decreasing in importance since the railroads came. Can you see why?

Foreign trade. Other European countries need Russia's food products but not her manufactures. Asia needs her manufactures. Why? Russia's wheat and lumber are mainly sent to Great Britain, Germany, France, and Holland. Great Britain, France, and Belgium take most of her export flax. Her imports are mainly raw materials. Raw cotton is supplied by the United States, Egypt, and India; metals and machinery, by Germany and the United States. Coal and coke come mostly from Great Britain, and rubber is purchased through the English market. In spite of extensive territory and great wealth of resources Russia, like all other nations, depends upon her neighbors for the supply of many needs.

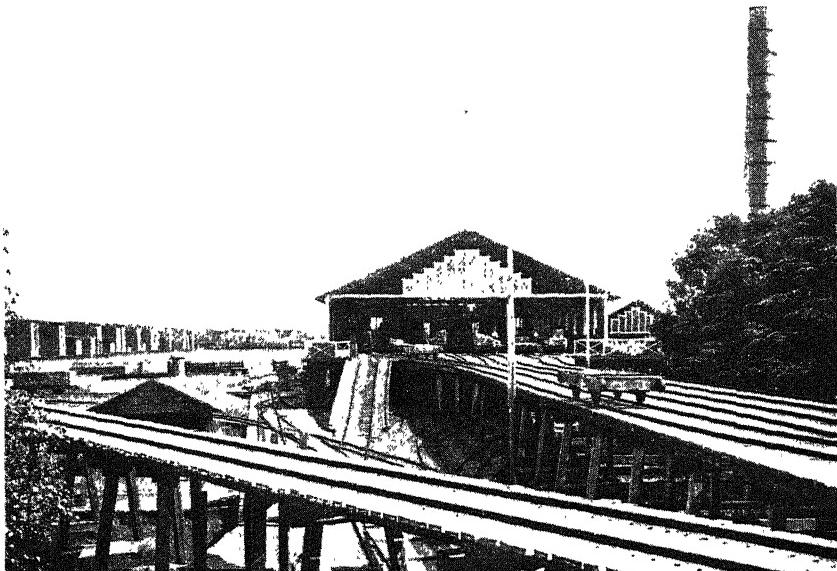
Emigration. As a result of oppression many people have left Russia to find new homes in lands of greater freedom. They have heard much about American liberty, and many have come to our shores to find it. This is especially true of the Jewish people, who have been oppressed much more than others in Russia.

Russia's political influence. Russia's great area, population, and natural wealth give her great promise for the future. Her location in the heart of Europe, connecting that continent with Asia on the east and south, give her a position of great political advantage. The great nations of Europe have feared that she might become the controlling power in the continent. This was dreaded by the democratic nations, as Russia was so autocratically governed. Much of this fear vanished when Russia was defeated by the little country of Japan. Her influence in the councils of the nations is less to-day than before that defeat. The unsettled conditions in Russia since the World War have also greatly reduced her influence. The other nations, and

Russia herself, have learned that national greatness is something more than mere extent of territory and size of population.

COUNTRIES FORMERLY A PART OF RUSSIA

Finland. Finland lies east of Sweden and is separated from it by the Gulf of Bothnia. For many years it belonged to Sweden, but in 1809 it was taken from her by Russia and at the outbreak of the World War was a part of Russia's vast empire. The



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 292.—A modern sawmill in Finland. Lumbering is Finland's largest industry. Notice the fine equipment of the mill and the great piles of lumber. What is done with such large quantities of lumber?

people were oppressed by Russia and in 1917 declared their independence. At the close of the war they adopted a republican form of government. About one-eighth of the people are Swedes. The remainder are mainly Finns, who are of Mongolian origin. These people are well educated and their industries are well developed (Fig. 292). They number nearly 3,500,000.

The soil is rather poor and the winters long. In spite of these unfavorable conditions, much farming is done. Grains, pota-

toes, flax, and hay are the most important crops. The country has developed an extensive dairying industry, the products of which find a ready market in the other countries of Europe.

The country has many glacial lakes and is largely covered with forests, which furnish much of the country's wealth (Fig. 293). Timber and wood pulp are produced in enormous quantities and make up the larger part of the exports (Fig. 292). Electric



Courtesy U. S. Bureau of Foreign and Domestic Commerce

Fig. 293.—A part of the great pine forest belt of Russia and Finland. These fine forests supply the other countries of Europe with a large part of the lumber that they use.

power, derived from many fine waterfalls, is used in the manufacture of wood products, paper, and textiles.

The Baltic states. Bordering upon the eastern coast of the Baltic Sea are the three small states of Estonia, Latvia, and Lithuania. These formerly belonged to Russia but are now independent republics. The territory of these three states is a part of that which was won for Russia by Peter the Great.

The people are not Slavs, as most Russians are. Estonia has a population of about 1,250,000. The people of Estonia are closely related to the Finns. Those of Latvia and Lithuania number about 6,000,000 and belong to the Caucasian race. The spirit of freedom among these people has been very strong for many generations.

The country is generally low and often marshy. With a cold climate and a poor soil, conditions are not highly favorable for agriculture. Nevertheless this is the leading occupation, due largely to the intelligence and thrift of the peasant people and to the lack of other opportunities. Rye, oats, barley, and flax are raised in considerable quantities. Dairying is an important business and fishing is extensively carried on. The forests furnish much lumber and paper pulp.

Riga, a very important city on the Gulf of Riga, is the commercial outlet for a large part of western Russia. Libau and Reval are also important centers. These states have sometimes been called Russia's "window on the Baltic." Their loss is a serious one to Russia.

QUESTIONS AND PROBLEMS

1. Why is European Russia a more important part of the country than Asiatic Russia?
2. Why is Persia important territory for both Russia and Great Britain?
3. Why was Port Arthur a seaport of great advantage to Russia? How did she lose it?
4. How may Russia greatly increase her food production?
5. In what part of Russia are famines most likely to occur? Why?
6. How does it happen that Russia is an agricultural rather than a manufacturing nation?
7. Why are Russia's rivers more valuable to her than ours are to us?
8. What does Russia need if she is to become an important manufacturing country?
9. Why was the loss of Finland and the Baltic States harmful to Russia?
10. Where do most people in Russia live? Where the fewest? Account for these facts.
11. Why are not the Black Sea ports of greater advantage to Russia?
12. Why has Russia been a backward nation?
13. Where are the oil fields of Russia? Compare them with those of the United States.

14. Leather is an important manufacture in Russia. Account for this.
15. What do we use in the United States that comes from Russia?
16. Describe the home industries of Russia. Why do the people have these industries?
17. How well is Russia supplied with railroads? What influence does this have upon the development of the country?
18. Some people believe that Russia is to be a much greater nation in the future than she is to-day. What reasons can you give for believing this?
19. Why have so many Russians come to the United States?

SUGGESTED PROJECTS AND EXERCISES

1. Find the density of population for Russia, Belgium, England, and the United States. Compare and account for differences.
2. Compare a map showing Russia in 1914 with one showing it as it is to-day (Fig. 296). Sketch all territory lost. Print the names. Indicate the people and language of each. Why have they become separated from Russia?
3. Make a product map of Russia including the tundra, forest, farm, and steppe belts. Tell the story of the life in each region.
4. Collect pictures of Russian life and samples of Russian products.
5. On a map of Russia trace a possible route of a boat from the Caspian Sea to the Arctic Ocean. From the Caspian Sea to the Baltic Sea. From the Black Sea to the Baltic Sea. What products are sent in each direction?
6. Imagine yourself in Vladivostok. Write a letter home telling of your journey on the Trans-Siberian railway from Leningrad to Vladivostok.
7. Write home a letter telling of your visit to a Russian fair. Contrast with fairs as we use the term.

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CHAPTER XXX

SOME NEW NATIONS AND THEIR NEIGHBORS

POLAND

Poland an old nation. History tells us that for nearly a thousand years there was a country called Poland occupying about the same territory as that shown on the present map. At the height of its power it covered an area three times as great as that of the British Isles and had a population one-third as great as that of the British Isles to-day. It was an independent nation until about the time of our American Revolution, when the rulers of Prussia, Russia, and Austria seized the territory and divided it among themselves.

From the time of the division of Poland until the World War the Poles had little or nothing to say as to the way in which they should be governed. In Prussia and Russia they were oppressed by very severe laws. Notwithstanding their persecutions they never gave up their language nor their fixed purpose to become a nation again.

The revolution in Russia and the defeat of Germany and Austria in the World War gave the Poles the opportunity they had long sought to restore the Polish nation. The Poles in Germany, Russia, and Austria earnestly desired freedom and an independent government. The Allies, the victors in the World War, encouraged the establishment of the new nation. Under these favorable conditions the Poles established a republican form of government.

Natural resources. Poland lies in the midst of the great central plain of Europe; therefore the greater part of the surface is level. Agriculture and manufacturing are the chief occupations. Grain, potatoes, and sugar beets are the leading crops. On the farms much hay is produced for horses, cattle, and sheep,

which are raised in large numbers. The raising of poultry is an important occupation in this part of Europe (Fig. 294). Poland will doubtless become a prosperous country.

Poland is fortunate in having deposits of coal and iron. The country produces about one-fortieth of the world's supply of petroleum. Because of these resources manufacturing has be-



Courtesy American Red Cross.

Fig. 294.—A Polish woman caring for her flock of geese. The raising of geese is an important industry in Poland and near-by countries. In many other European countries, geese are a commoner kind of fowl than in our country.

come very important in eastern and southern Poland. This country also possesses some of the greatest salt mines in the world. Some of the beds extend underground for several hundred miles and in places are 1200 feet thick. Many men are employed in mining the salt.

Industries and trade. The chief products of the mills and factories are iron and steel, textiles, and beet sugar. Lodz is the center of the textile industry, while Warsaw (Fig. 295) produces a variety of products, including leather, machinery, and sugar.

Poland is in a very good position to carry on trade with other countries. Railway lines connect it with the principal European markets. The manufactures of central Europe pass through Poland to agricultural Russia, while the farm products of Poland and Russia find a good market in the densely settled parts of central and western Europe. Moreover, Poland has access to the Baltic Sea through the internationalized port of Danzig.



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Fig. 295. — A street in Warsaw, one of the leading cities of Poland. Some of the industries responsible for growth of this city are the manufacture of boots and shoes, sugar refining, and the making of lace and embroidery.

Products of countries to the east and south must also pass through Poland on their way to Baltic ports. With her industrious and patriotic citizens and with excellent possibilities for agriculture, manufacturing, and commerce, Poland should become one of the influential and prosperous countries of central Europe.

CZECHOSLOVAKIA, HUNGARY, YUGOSLAVIA, AND AUSTRIA

Why these countries were formed. Austria-Hungary, shown on the old map of Europe (Fig. 296), was made up of the Empire of

Austria and the Kingdom of Hungary. Each government ruled its own people without interference from the other except in matters concerning their relations with other nations. The two countries had the same army and navy and made treaties as one nation. The agreement between Austria and Hungary to form a single empire helped both countries to hold together the several races which made up their population.

In the old Austro-Hungarian Empire there were four distinct groups of people, the Czechoslovaks, the Magyars, the southern Slavs, or Yugoslavs, and the Germans.

When the Austro-Hungarian government was overthrown near the close of the World War each race eagerly seized the opportunity to set up a government of its own. Each of these new countries established a republican form of government except Yugoslavia, which has a king. Therefore on the present map of Europe we find south of Poland and Germany four countries occupying about the same territory as that formerly occupied by Austria-Hungary (Fig. 296). They are Czechoslovakia, Hungary, Yugoslavia, and Austria.

Czechoslovakia is inhabited very largely by Slavs, those in the west being known as Czechs and those in the east as Slovaks. From these people the country gets its name. Most of the people living in Hungary are known as Magyars or Hungarians. Their ancestors who first settled in the land were called Huns; hence the name of the country, Hungary. Yugoslavia is inhabited by Slavs, related to the Czechs and Slovaks of the north. The word Yugoslavia means "southern Slavs." The population of Austria is largely German.

Influence of the United States upon the new nations. Many immigrants have come to the United States from the parts of Europe now occupied by Poland, Czechoslovakia, and other new countries. Here they found freedom and opportunity for employment far superior to that of their own countries. American government and ideals came to hold a high place in the minds of these new Americans and through them in the minds of their countrymen in Europe. During the World War in an effort to increase American interest in their struggle some of the American

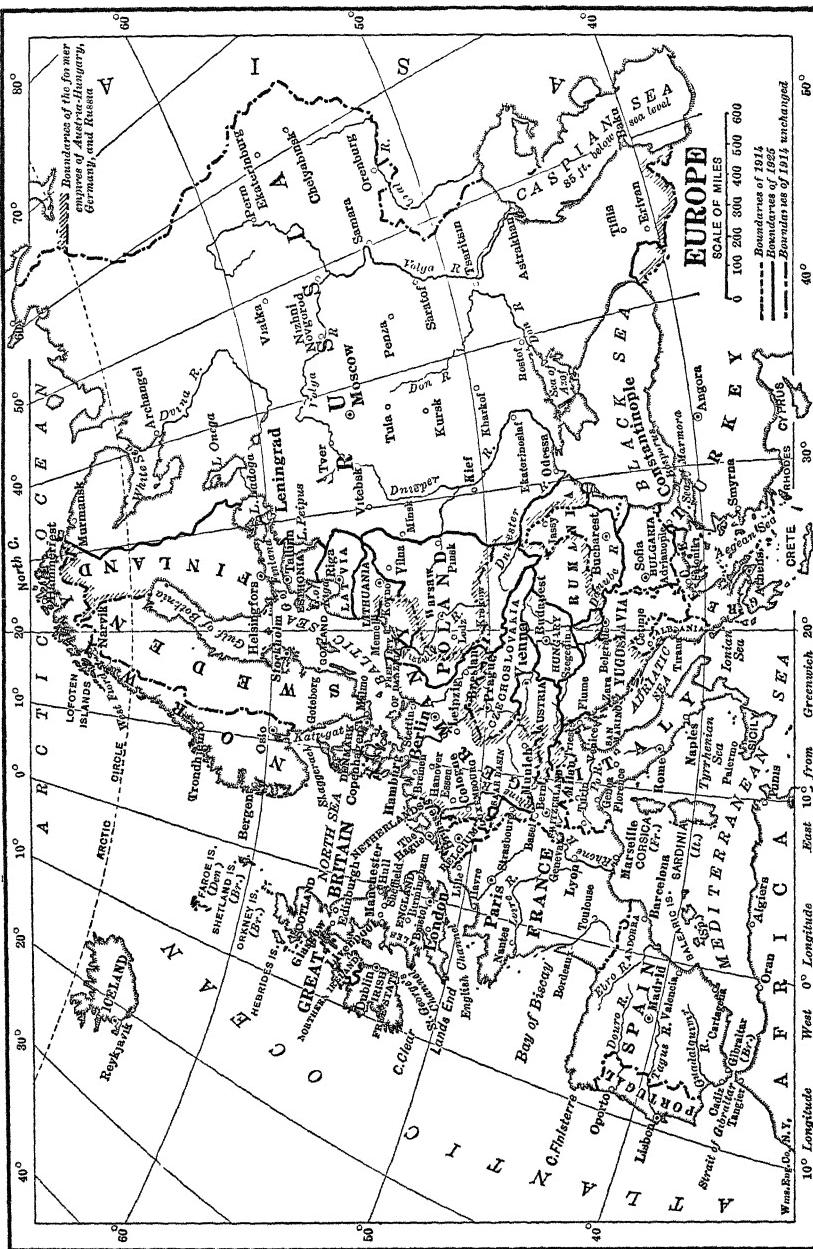


Fig. 296.—Europe, showing old and new boundaries.

leaders of these people met in Independence Hall, Philadelphia, where they drew up and signed a declaration of independence similar to that signed by the American colonists July 4, 1776. After the signing of the peace treaty some of the leaders who had lived in the United States returned to their native lands and took an active part in constructing new governments.

CZECHOSLOVAKIA

The people. Czechoslovakia is a new nation. The western province known as Bohemia was, however, at one time independent and influential. This part of Czechoslovakia together with Moravia and Silesia, two provinces lying to the south and east of Bohemia, is occupied mainly by the Czechs, the more enlightened and progressive of the Slavs.

The Slovaks are far behind the Czechs in education and general progress (Fig. 297). There are several reasons for their backward condition. The region in which they live has few resources, the soil is thin and poor, the surface is very rugged, and there are few minerals. The people make a living with difficulty. When the yield of the farms is smaller than usual, some of the men are obliged to leave their homes and

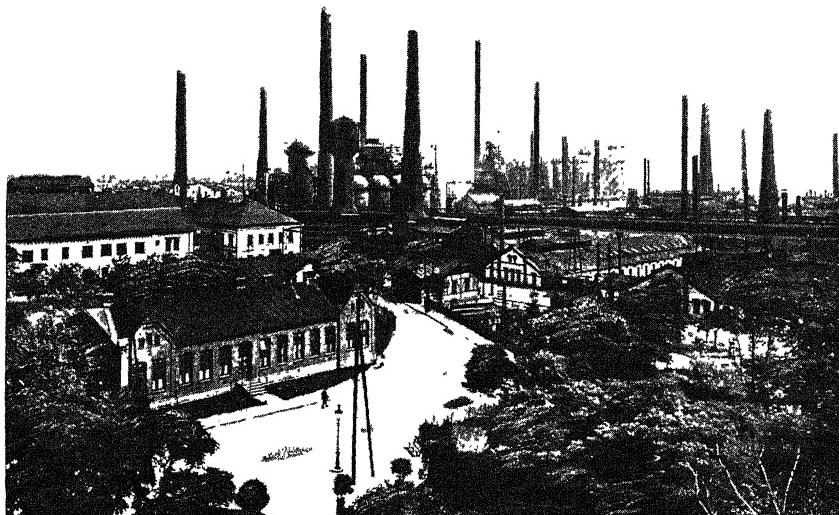


Courtesy Czechoslovak Legation

Fig. 297.—Young men and women of eastern Czechoslovakia dressed in native costumes. The garments of the men as well as those of the women are gaily embroidered. Czechoslovakian embroidery is now on sale in the United States.

travel through neighboring countries as tinkers. Furthermore, they have been harshly treated by the Magyars, for this part of Czechoslovakia was formerly a part of Hungary. The Czechs on the other hand possess the richest part of the country.

Resources and industries. The western and central parts of Czechoslovakia have considerable areas of rich, level land. These plains yield large crops of grain, potatoes, sugar beets,



Courtesy Czechoslovak Legation.

Fig. 298.—The manufacture of iron and steel in Czechoslovakia. Since western Czechoslovakia is well supplied with coal and iron, the chief manufacturing centers are in that part of the country.

and hops. Fruit is also produced in large quantities and sent to other parts of Europe. Many geese are raised on the small farms. Bees are kept and much honey is produced.

Surrounding the plains are highlands covered with forests. The forests supply bark for the tanneries, besides raw material for wood pulp, pencils, toys, furniture, and other articles. Cheap bent-wood furniture is sent from this region to all parts of Europe and America.

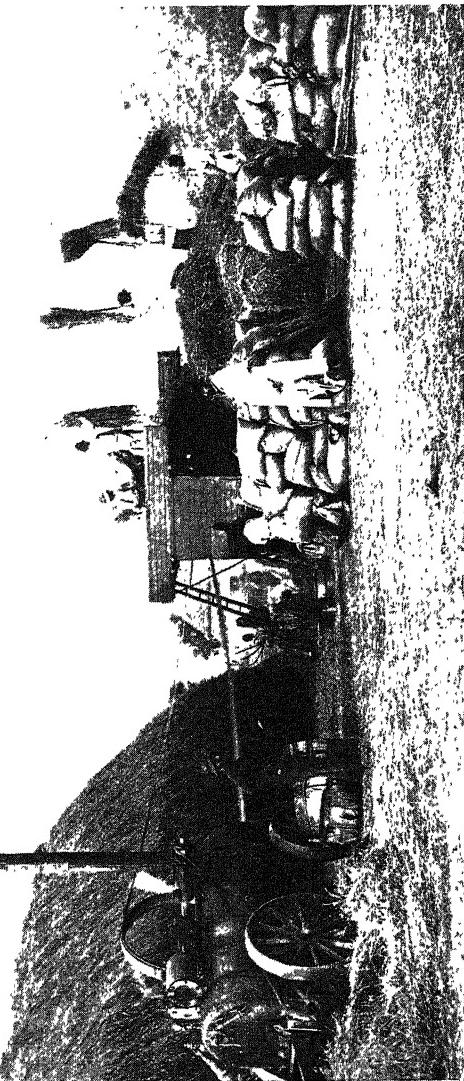
This part of the country has both coal and iron; therefore important manufacturing industries have grown up here (Fig. 298). The products include machinery, cotton, woolen and linen goods, beet sugar, and beer. Bohemian glassware, famous the world over, has been made here for centuries. The Bohemians learned how to make this from the Venetians. The different minerals used for the purpose of giving the glass its beautiful coloring are found in Czechoslovakia.

Prague, on the upper Elbe, is the chief industrial and trade center of the country. Steamships ply between this city and Hamburg, which is near the mouth of the same river. Thus there is easy communication with Germany and through Hamburg with all parts of the world. Goods may readily be shipped to and from Hungary, Rumania, Bulgaria, and Yugoslavia by means of the Danube River.

HUNGARY

Reasons for the position of Hungary. About fifteen hundred years ago thousands of Slavs swarmed into what is now Czechoslovakia, Hungary, and Yugoslavia and settled there. Several hundred years later the Magyars, who were then barbarians, swept into what is now Hungary, forming a wedge which divided the Slavs into two groups, the Czechoslovaks on the north and the Yugoslavs on the south. It is for this reason that we now find Hungary located between Czechoslovakia and Yugoslavia. The present Hungary is much smaller than the old kingdom, since parts were lost to Czechoslovakia, Yugoslavia, and Rumania.

Resources and industries. Hungary lies in the level plains of the Danube River. It is one of the richest agricultural countries of Europe. The climate is well adapted to the growing of grasses and cereals. The products are similar to those of our own Middle West. Wheat (Fig. 299) and corn are important crops, and cattle and horses are raised in large numbers. The manufactures are not important. Since there is little coal and iron, Hungary has less opportunity for manufacturing than Czechoslovakia. The manufacturing industries make use of the agricultural products. Flour milling is one of the chief indus-



Courtesy International Harvester Co.
Fig. 299.—American machinery threshing wheat on the great plain of Hungary, one of Europe's most important grain-producing areas.

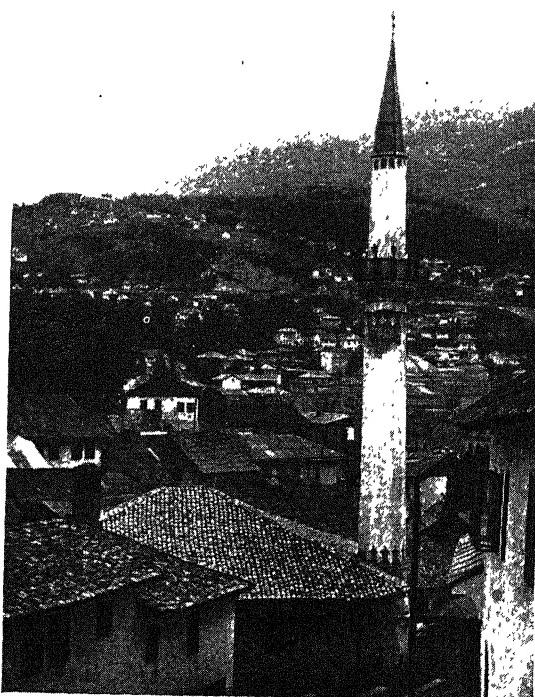
tries. Breweries and distilleries also make use of the grains. The raising of cattle and the presence of forests on the highlands lead to the tanning of leather. The iron and steel works produce chiefly machinery and agricultural implements. The chief river port and industrial city is Budapest, situated on both sides of the Danube. The principal manufacturing plants of the country are located in this city.

Hungary is not favorably situated for commerce except with countries near at hand. The Danube is navigable but it leads to an inland sea. Between Hungary and the Adriatic Sea are mountains which make it difficult to carry goods to or from the seaports. The principal exports are wheat, meats, and leather, and the chief imports are manufactured goods.

YUGOSLAVIA

Yugoslavia consists in part of those sections of the former

Austro-Hungarian Empire which were inhabited by southern Slavs. To this were added the former kingdoms of Serbia (Fig. 300) and Montenegro. The people of these territories are now all united under one king. Not only is the country on the whole



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Fig. 300.—A part of the city of Serajevo in Yugoslavia. It was in this city that the World War really had its beginning. Here the murder of the heir to the Austrian throne led Austria to declare war on Serbia. Other nations took sides with one or the other until the greater part of the world was engaged in the struggle.

mountainous or hilly, but the people are backward and have not developed the agricultural or industrial resources of the country. Grazing is the chief occupation of the people. Many cattle, goats, sheep, and hogs are raised. The forests are extensive. Considerable lumber is produced, and from the nuts of the forest trees the swine obtain much of their food. Deposits of copper, coal, and iron occur, but these have been worked but little. In recent years iron and steel have been manufactured to some



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 301. — On the right in this picture is a salesman who is selling in Yugoslavia typewriters made in the United States. Note the way in which the machines are being carried from place to place. How would they be carried in our country?

extent. Now that the Yugoslavs are no longer under the control of the Magyars, they have an opportunity to develop their resources and secure their share of the world's trade.

AUSTRIA

Changes in Austria. The Austria of to-day is quite unlike the Austria of 1914. The area and population are about one-fourth of what they were then. Moreover, in the territory which Austria

has lost are located the richest resources and the chief industries of the old empire. Its greatest loss was that of western Czechoslovakia with its wealth of coal and iron, its rich farm lands, and its manufacturing cities.

The part which remains as present-day Austria is almost wholly mountainous. The chief resources of this mountainous



Photo from Keystone View Co.

Fig. 302.—A beautiful winding road among the high mountains of Austria. How can you tell from the picture that these are high mountains? In what ways are these mountains and valleys real resources of the country?

region are many well-kept forests, a few minerals, and the beautiful scenery. The Tyrol (Fig. 302), lying next to Italy and Switzerland, is a continuation of the Swiss Alps and, like them, is a great resort for tourists. Innsbruck is a city well known to all who travel on the continent.

The small amount of lowland lies near the Danube River. The farming lands are limited to these lowlands and to valleys

in the mountains, some of which have very rich soil and yield excellent crops. Austria has some coal and iron.

Vienna, the capital, is one of the largest cities of Europe. It is located on the Danube near the point where the river forms a pass between the Carpathian Mountains and the Alps. Some of the oldest European trade routes cross each other at this point. One of these routes connected the Baltic and Adriatic seas. To-day goods are taken over these routes almost wholly by rail. As in all large cities, there is a great variety of industries. Some of the products of the factories are machinery, paper, leather, and silks. Vessels for use on the Danube are built at Vienna. For many years the city has been a center of culture and fashion. A large university is located here.

The making of gloves is an important industry in Austria as well as in Czechoslovakia. Much of the work is done in the homes. Skins are imported from Hungary and the Balkan countries. Many of the gloves made here are sent to the United States. We learned in our study of the glove industry of New York State that many of our finest gloves are imported from European countries.

THE BALKAN COUNTRIES

What the Balkan countries are. The Balkan Peninsula is the most easterly of the three great peninsulas of southern Europe. It includes Greece, Albania, Bulgaria, a small part of Turkey, the southern part of Rumania, and Yugoslavia.

The region is mountainous, and the people have generally made their homes in the numerous valleys of the peninsula. They are mainly farmers or herdsmen and very generally own their own farms (Fig. 303). Their farming methods are primitive. Many of the mountains are covered with forests and in some places are well supplied with minerals, but nowhere is mining extensively carried on.

Influence of a commanding geographical position. Three important trade routes center in the Balkan region. First, the Danube River, with its commerce so important to central Europe, crosses the peninsula and connects with the Black Sea.

Second, one of the easiest natural land routes between Asia and Europe lies over the narrow strip of land between the Black and the *Æ*gean seas. For many centuries this has been the great highway between the two continents. Over it passes the great overland trade between Europe and Asia. The northward extension of this route into central Europe takes it through the present cities of Adrianople, Sofia, Belgrade, Budapest, Vienna, and Prague. To-day an important railroad follows this route



Fig. 303.—A country scene in Bulgaria. This region is in the southern foothills of the Balkan Mountains not far from Sofia. On the level land corn and tobacco are the chief crops. Where the surface is more rugged many sheep and goats are raised.

from Constantinople to Berlin. The third route lies between the Black and the *Æ*gean seas, which are connected by two narrow straits, the Bosphorus and the Dardanelles, between which is the Sea of Marmora. The Bosphorus is only about twenty miles long and one third of a mile wide at its narrowest point. The Dardanelles is about forty miles long and is a little wider than the Bosphorus. All water-borne commerce between the Black Sea and the Mediterranean must pass through these narrow straits, and all overland commerce between Asia and Europe must cross

them. Any nation, therefore, that controls these straits controls these important trade routes.

The crossing of so many important commercial highways in the Balkan countries gives to these states a very commanding position. It is this accident of geographical position that gives them their important place in the affairs of the world.



Photo from Ewing Galloway.

Fig. 304. — A bird's-eye view of the Golden Horn and a part of the city of Constantinople. The Golden Horn is an inlet of the Bosphorus, five miles long, half a mile wide, and deep enough to float the Turkish warships. It increases the size of the harbor and thus helps to make Constantinople an important port.

QUESTIONS AND PROBLEMS

1. For about one hundred twenty-five years the Poles were controlled by other countries. Why was their nation reestablished at the close of the World War?
2. What reasons have we for believing that Poland will become a prosperous country?
3. What conditions favor manufacturing in the larger cities of Poland?

4. With what countries do you think Poland will carry on the most of its trade? Why?
5. Explain why Czechoslovakia, Hungary, and Yugoslavia were so named.
6. Why do you think new nations might wish to pattern their governments after ours?
7. Western Czechoslovakia has a much larger population than eastern Czechoslovakia. Account for this difference.
8. Compare the resources and products of Hungary with those of our own Middle West.
9. Why are the industries of Yugoslavia not so fully developed as those of Czechoslovakia?
10. Why is the new Austria likely to be much less influential than the Austria of former years?
11. Why have not the Balkan people made greater progress?
12. Why are the great powers of Europe so much interested in the Balkan countries?
13. Why is Russia especially interested in the Balkans?

SUGGESTED PROJECTS AND EXERCISES

1. Make a map of the countries studied in this chapter. Locate the chief cities and important resources of each country.
2. Trace the railroad from Berlin to Constantinople. Through what important cities does it pass? On an outline map draw this road and continue it to Bagdad. Why would such a railroad as this have been important to Germany, especially if it were continued to the Persian Gulf?
3. Trace in color on an outline map:
 - (a) The route from Odessa through Gibraltar to London.
 - (b) The Danube River from Ulm to the Black Sea.
 - (c) The Berlin-to-Bagdad railroad.

Note where these routes cross, and explain how this gives importance to Constantinople and the Balkan States.

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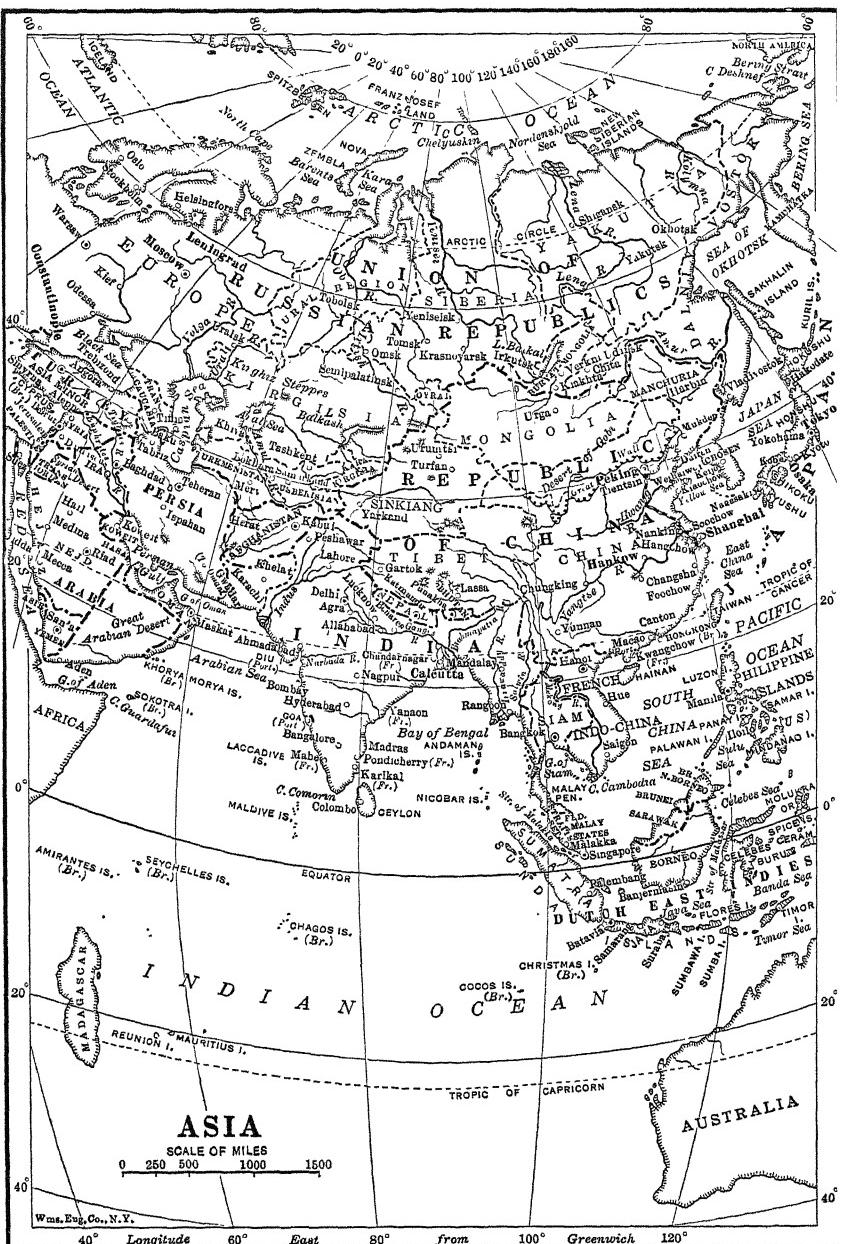


Fig. 305

PART IV
THE ORIENT

CHAPTER XXXI

CHINA: A LAND OF UNDEVELOPED RESOURCES

The provinces of the Chinese Republic. The Republic of China is made up of five provinces, China proper, Manchuria, Mongolia, Sinkiang, and Tibet (Fig. 305). A very large part of all the people of the Chinese Republic live in China proper. This densely settled province contains the richest farm lands and carries on nearly all the manufacturing done in the Republic. Manchuria also has rich soil, but owing to lack of rain a part of the province is suitable only for grazing. Mongolia, Sinkiang, and Tibet are largely desert and therefore have very small populations for their large areas.

China, an ancient nation. China is a very old nation. Powerful emperors ruled the country hundreds of years before the Ten Commandments were given to Moses. The Chinese had made considerable progress in civilization even when the whole of Europe was inhabited by barbarous peoples. It is thought by some that the European peoples learned from China how to make and use gunpowder and how to produce and manufacture silk. The Chinese were also the first to discover how to make fine porcelain. It is for this reason that we give it the name of china-ware. The mariner's compass, which was known in Europe only two hundred years before the discovery of America, is said to have been invented by a Chinese emperor twenty-five hundred years before the birth of Christ. Paper was manufactured and books were printed in China long before printing was invented in Europe. The great Chinese wall, 1500 miles long, built to protect the people from their enemies on the north, was erected more than two thousand years ago. Many parts of the wall are still in excellent condition. This great wall is twenty-five feet wide and thirty feet high and is long enough to extend from Lake

Superior to the Gulf of Mexico. Certainly only people of intelligence and skill could successfully complete a piece of work like this. Thus we see that thousands of years ago the Chinese people had reached a state of civilization superior to that of most other people of that time.

China's condition to-day. In later centuries, the Chinese have fallen behind in the march of progress. They have been too well satisfied with their own ways of doing things (Fig. 306).

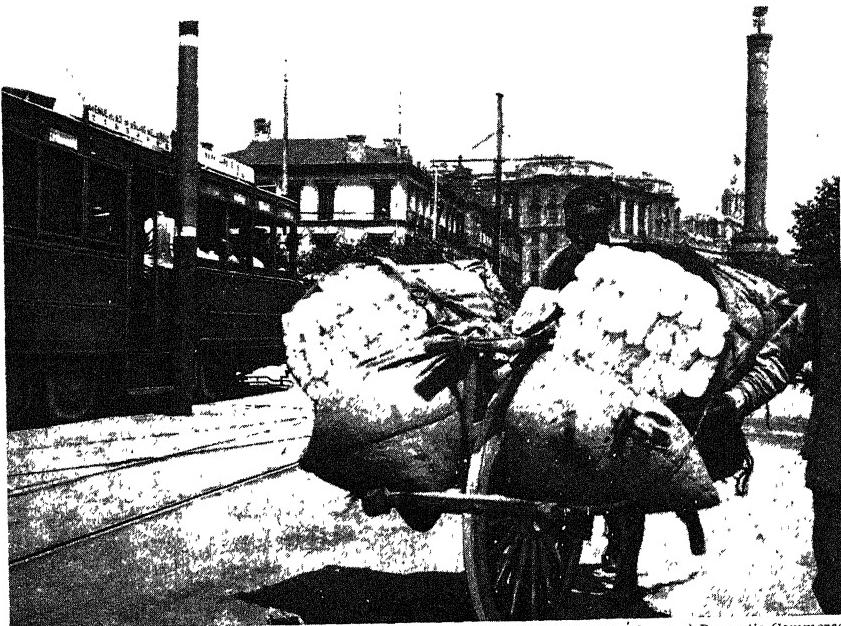


Fig. 306.—Chinese fishermen. These birds are cormorants that are trained to catch fish for their masters. Brass rings are slipped around the necks of the birds to prevent them from swallowing the fish. How does this compare with modern methods of fishing?

While the people of other countries have used machines driven by steam and electricity to aid them in their work, the Chinese have been content to do their work by hand as their fathers did. They plow their land with crude wooden plows, some of which are drawn by men. In many parts of the country the farmers cannot afford to keep horses and oxen to help them in their work. Wheelbarrows are frequently used to carry goods from place to

place (Fig. 307), and they are sometimes used to carry passengers. More than half of the people of the country do not have even the wheelbarrow. Goods are carried on the backs of men. Such means of transporting goods are possible only in a country where labor is very cheap. Many coolies, as these laborers are called, receive very small pay for a hard day's work.

The population is very dense and the distribution of food supplies is a serious problem. Some parts of the country have



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 307.—A method much used for transporting goods in China. China has very poor roads, perhaps better adapted to the wheelbarrow than to any other vehicle.

no railroads or other modern means of transporting goods. For this reason products cannot readily be carried from a part of the country where the harvest is large to a part where the crops have failed. Thus there is sometimes much suffering in provinces where the people are unable to obtain food.

The progress of a country, as a rule, is shown by its schools. Until very recently the schools of China have been quite different

from ours. Instead of studying various subjects that would be useful in later life, pupils spent their time in memorizing the works of Confucius and other writers. We should hardly expect people who have made no changes in their schools or their methods of doing their work for hundreds of years to make much progress in manufacturing and commerce.

China unable to protect herself. Because the Chinese have been content to live as their ancestors lived, they have not been able to maintain an army or a navy which could meet successfully those of more progressive nations. The Chinese were easily defeated by the Japanese in the war between the two countries in 1894. Moreover, China has been unable to prevent European nations from gaining possession of portions of her territory. Burma, Weihaiwei, Hongkong, and a small portion of the mainland near Hongkong have passed from Chinese control into the hands of the British. French Indo-China is made up of portions of territory which at different times have been obtained from China. Before the World War, Germany controlled a part of the Shantung Peninsula, which she had compelled China to lease to her. During the World War this peninsula was seized by the Japanese. As a result of a conference of the great powers called by President Harding to meet in Washington in 1921, Japan restored Shantung to China. In the north, Korea, now a part of the Japanese Empire, once belonged to China. The Liaotung Peninsula and the southern part of Manchuria are also controlled by the Japanese, as are parts of Mongolia. The part of Siberia south of the Amur River was ceded to Russia by China. Before the World War Russia exercised a great deal of influence in northern Manchuria, although the region is considered a part of the Chinese Republic. Again and again China has been obliged to yield to Japan and the great powers of Europe. This dividing up of the country has been called the "dismemberment of China."

Why China is a weak nation. We can readily see that China's weakness is not due to small size or small population. The area of the Chinese Republic is greater than that of the United States. It is even larger than all the countries of Europe combined.

China is weak because she has shut herself out from all the rest of the world. The mountains on the south and west, the sea on the east, and her own great wall on the north made it easy for her to live by herself. Another reason for China's lack of strength and progress is the religion of the country. About half of the people of the country worship their ancestors and therefore think that the ways of their forefathers are the best ways. They have tried to keep foreigners out of the country. They have objected to the use of machinery and railways. In some cases the Chinese have destroyed railways which had been constructed by foreigners. The roads were destroyed because they meant the introduction of methods unlike those of their fathers and because they were sometimes built over land sacred to their dead.

The United States a friend to China. The United States has never attempted to gain control of any part of China. On the other hand, whenever possible we have tried to help China to keep her lands under her own control. The United States also stands for what is known as the "open-door" policy. That is, our government believes in equality of commercial opportunity. It is better to allow China to keep her territory, to govern herself, and to give all nations an opportunity to trade with her and to develop her resources.

The friendliness of our government toward China was also shown in another way. In 1900 an uprising occurred in China which endangered the lives of citizens of the United States and citizens of several of the strong nations of Europe who happened to be in China at that time. The countries whose citizens were attacked compelled China to pay them large sums of money. The United States soon afterward decided not to compel China to pay the sum awarded to our country. The Chinese appreciated the friendly act of our government and have made use of the money thus saved to them by sending Chinese students to our schools and colleges. Because the Chinese feel that we are friendly toward them, they often turn to us for advice and assistance when they are in trouble.

A land of dense population. By far the greater part of China's resources is found in China proper. This part of the country

has only about one-third of the area of the Republic, but it contains more than nine-tenths of the population. If the entire population of the United States and forty million more people were all crowded into the state of Texas, the density of population would be about the same as that of the plains of eastern China.

Agriculture the leading occupation. Agriculture is the chief occupation of these millions of people. The area cultivated

by one family is very small, so small in fact that the Chinese have been called gardeners instead of farmers. Although the people have very simple tools, they are very industrious and raise large crops on their small plots.

They fertilize the land by spreading upon it mud dredged from the bottoms of the many canals which cross the plains in all directions. In some parts of the country the rainfall is not sufficient to grow crops in the light soil. To make farming pos-



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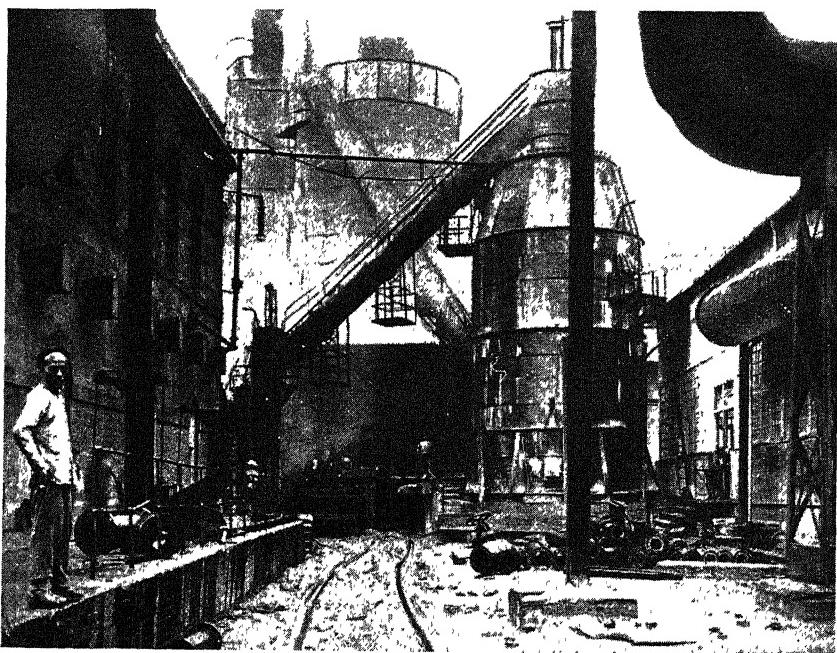
Fig. 308.—Hillside terraced for the growing of rice. Why is it necessary to build the terraces? How are they irrigated? How does terracing help to preserve the soil of the hillside?

sible in these sections, the Chinese pump or even carry water to the fields. So great is the need of land in this thickly settled country that steep hillsides are often terraced. Water is then carried with great labor to the hilltop, from which it flows from terrace to terrace, watering garden after garden in its downward course (Fig. 308).

The chief crops of northern China are wheat, millet, peas, and

beans. In the more southern parts of the country tea, rice, sugar, cotton, and indigo are raised.

Silk is one of the chief products of the country. China produces more than one-fourth of the world's supply of raw silk. Millions of people are engaged in the production of silk. Mulberry trees, which supply food for the silkworms, are frequently grown along the banks of the canals. The trees are not allowed



Courtesy National City Bank, N. Y.

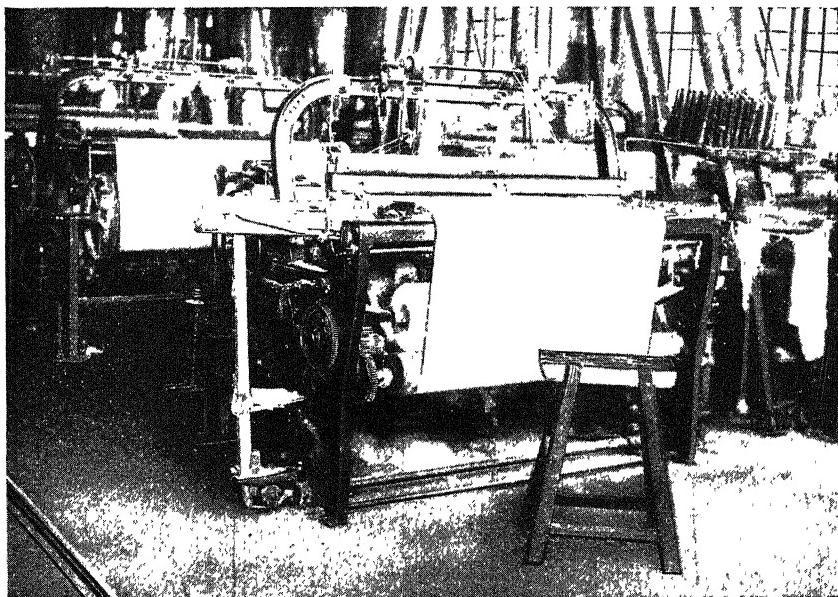
Fig. 309.—A steel plant near Hankow, China. Not far from this city is one of the largest deposits of iron ore in the world. Coal is also mined near by.

to grow much higher than a man's head. The leaves can then be gathered easily by a person standing on the ground.

China raises some cotton, nearly all of which is used in the country. A small quantity is exported to Japan. Until recently nearly all the spinning and weaving was done by the use of very crude machines. In recent years a number of large cotton mills have been established. Nearly all the cotton, a very large part

of the silk and the tea, and practically all the foods produced in the country are consumed by the Chinese themselves.

Coal and iron. It is not so much the agricultural resources of China which appeal to the business men of other nations as the large deposits of coal and iron (Fig. 309). China has larger known deposits of coal than any other country except the United States. It has been estimated that China could produce a billion tons of coal per year for a thousand years. Besides coal, there are large



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

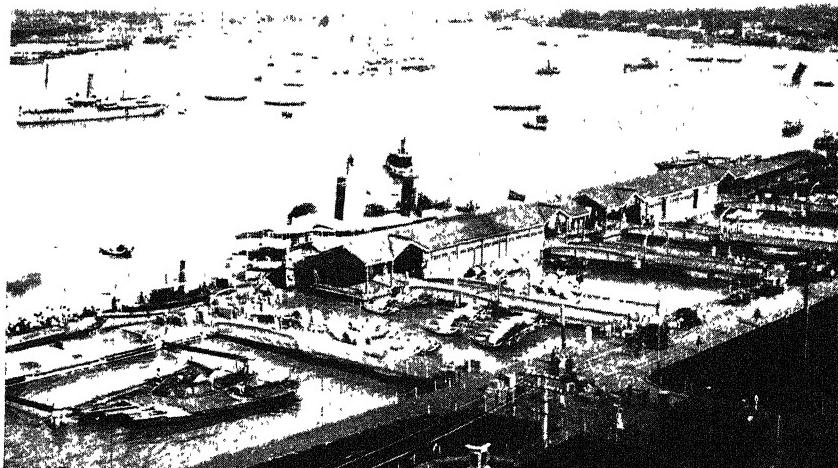
Fig. 310.—Weaving room in a modern Chinese cotton mill, Shanghai. These modern looms show the rapid advancement that is being made in Chinese industries.

deposits of iron ore located conveniently near the coal mines. Only small amounts of coal and iron have been mined by the Chinese.

Recent industrial progress. In recent years business men from other countries, especially Japan, Great Britain, Germany, and the United States, have opened mines and established steel plants and textile mills. In so doing they have, of course, introduced modern methods as well as modern machinery. Many of the Chinese

have caught the spirit of progress and are beginning to carry on industries in the same way as the more progressive nations. China now has modern cotton mills (Fig. 310), besides flour mills, oil presses, machine shops, foundries, electric-power plants, and other factories of various kinds. Some of the more progressive cities of China have electric lights, electric cars, a piped water supply, telephones, paved streets, and public schools. China is really making progress.

The future. One can hardly imagine the vast amount of work which three hundred fifty million Chinese could do if all were to use up-to-date methods and modern machinery. Think what great quantities of goods they could sell to other countries! In return they would receive large sums of money. They would then be able to buy from other countries goods which now they cannot afford to buy. When China thus awakens, the people will demand many articles that we consider necessities but of which they now



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 311.—Passenger landing stages at Shanghai, the chief port of China. Besides being a commercial city, Shanghai has fifty-seven cotton mills, four woolen mills, and twenty-one flour mills. Thus we see that in some respects this is quite a modern city.

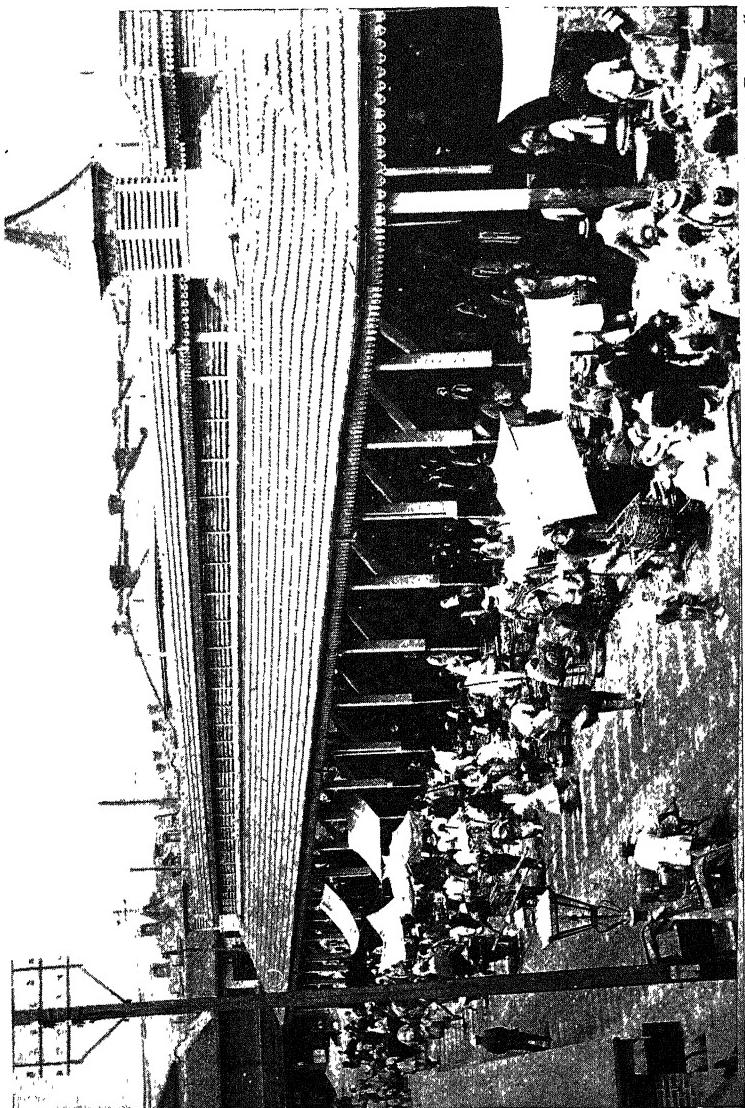


Fig. 312.—One of the busiest markets in Shanghai. Here farmers from outlying districts bring their products and sell them to merchants. All kinds of Chinese goods are handled at this busy spot.

Courtesy American Express Co.

know nothing. Instead of carrying goods from one part of the country to another on their backs, they will use railroads and auto-trucks. Instead of riding in wheelbarrows, they will prefer automobiles. They will also build larger homes and stores than many have to-day. As we have seen, changes of this kind are already taking place. The city of Canton has a new thirteen-story department store owned and operated by Chinese. Railroads too are being built in different parts of the country.

We can understand now why the great commercial nations of the world are deeply interested in China. There is abundant power for factories and for transportation, and coal and iron for making steel, to be used in machinery, rails, cars, and ships. Raw material is at hand in the form of cotton, silk, and other materials produced in the country. When all these resources are fully developed, China will be one of the greatest manufacturing countries in the world and one of the greatest markets in which goods may be bought and sold.

China's trade with the United States. As Americans, we are interested in finding out what China has to send to us and which of our products China needs. China sends us raw silk, raw cotton, soy-bean oil, peanuts and peanut oil, tea, hides, and skins. We also receive considerable quantities of straw braid used in making straw hats. Labor in China is so cheap that the braid can be made at small cost. The value, however, of the straw braid which China exports in a single year is worth more than five million dollars.

The most important products that we export to China are articles made of steel, including machinery. The Chinese need machinery for their textile mills, their flour mills, and their electric-light plants. Besides machinery, China also imports from America cotton cloth and petroleum and its products.

As time passes and the Chinese learn more and more of Western customs, we shall expect to find them trading with the United States and the countries of Europe much more than they do to-day.

China's commercial cities. Shanghai is the chief commercial city of China (Fig. 312). It has been called the New York of

the Chinese Republic. Peking, the capital, has for its port the important commercial city of Tientsin. Canton lies nearly opposite the island of Hongkong, which is owned by the British and which carries on a large trade with all parts of the world. Hankow is one of the chief cities of the interior. It is near large deposits of coal and iron and can be reached by ocean-going steamers by way of the Yangtze River.

QUESTIONS AND PROBLEMS

1. How does it happen that some provinces of China are very densely settled while others are very sparsely settled?
2. What are the evidences of China's progress hundreds of years ago?
3. Why do you think this progress did not continue in later centuries?
4. What would be the result if people in America did their work as the Chinese do?
5. What nations have gained control of parts of China? Of what benefit do you think it is for each of these nations to have influence in China?
6. What agricultural resources of China do you think would prove most useful to Japan? Why?
7. What mineral resources of China would other nations like to develop? Why?
8. How would other countries profit by an increase in China's output of agricultural and manufactured products?
9. How has our country shown its desire to be friendly with China?
10. How can many people get a living on the very small farms in the densely settled parts of China?
11. What improvements are shown in China's methods of manufacturing?
12. Why may China become one of the greatest manufacturing and commercial nations of the world?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of China color the five provinces.
2. Draw a map of China showing the desert area, mountains, rivers, coast cities, and plains.
3. Write the story of "The Great Wall of China." Illustrate with pictures or sketches.
4. Make a population map of China and tell the story of life on the Desert of Gobi; on the Plateau of Thibet; on the coast lowlands; on the Chinese river boats.
5. Make a collection of Chinese silks, tea, and other products of the country.

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CHAPTER XXXII

JAPAN: A NEW WORLD POWER

Why Japan's location is a good one. Japan has a good location in the Pacific Ocean (Fig. 313). It is often likened to that of Great Britain in the Atlantic. It is far enough from the mainland to be free from sudden attack. It is also favorably located for trade with all parts of the world. It is easily reached from China, India, Australia, and the western coasts of North and South America. By means of the Panama and Suez canals it can readily carry on trade with other parts of the world.

Japan the most progressive nation of the Far East. Japan is the foremost nation in the Far East. The people, like the Chinese, belong to the yellow, or Mongolian, race. Their government is a monarchy, the ruler being known as the Mikado. Their parliament is very much like that of England. The members of the upper house belong to the nobility; those of the lower house are representatives chosen by the people. The people, however, have much less power in the government than the English people have.

The area of the islands of Japan, not including Taiwan and Sakhalin, is less than the area of our single state of California; yet the population of those small islands is about half as great as that of the United States. Surely the people of Japan must be very industrious to support themselves in so small a country.

In the year 1854, Commodore Matthew C. Perry of the United States Navy compelled the Japanese to open their ports to foreign trade. Since that time the people of Japan have been eager to advance. They have studied the schools of Europe and America and have built up excellent school systems of their own. Many Japanese students attend schools and colleges in other countries, and teachers for Japanese schools are sometimes obtained either

from European countries or the United States. Japan's progress is due very largely to the willingness of the Japanese people to profit by the experiences of more advanced nations. This rapid progress would not have been possible, however, without the favorable climate and the varied resources of their country.

The climate. Since the Empire extends from the latitude of 50° north to the Philippine Islands, a distance greater than from



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Fig. 314.—A native of the interior of Formosa cutting camphor wood into chips. The chips are then cooked to extract the camphor. Notice the manner in which the worker's hut is built.

Maine to Florida, there is a great difference of temperature in different parts of the country. There are also differences in the temperature because of differences in elevation, as the country is very mountainous. Japan lies within the monsoon region of southeastern Asia and therefore receives the greater part of its rain in the summer when it is most needed by growing crops.



Courtesy Japanese Government Railways.

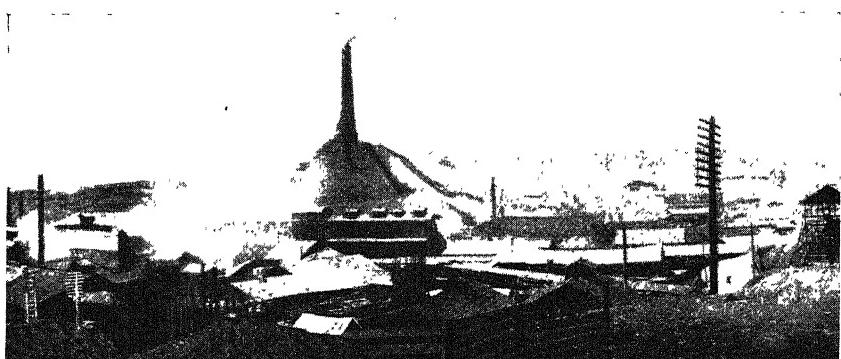
Fig. 315.—A coal mine and its related industries at Miike, on the island of Kyushu. The upper picture shows the harbor of Miike. In the middle picture are shown the industrial plants dependent upon coal. These include smelting plants, dye works, and gas and coke ovens. The third picture shows the vicinity of the mine itself. What three great occupations have developed about this deposit of coal?

The climate varies from almost tropical summer heat in the south to frigid winters in the north. Because of the beautiful scenery and interesting people thousands of Europeans and Americans visit the islands every year.

Forest resources. Since the islands are mountainous, much of the land is suitable only for forests. The trees of the forests vary from the palms and bamboo of the southern lowlands to the oak and pine of the mountain slopes. Cedars grow in abundance and are much used in shipbuilding. Two very unusual trees grow in these islands. They are the lacquer tree and the camphor tree (Fig. 314). The lacquer tree yields a kind of varnish. The gum of the camphor tree is used in medicines and combined with other substances is used in making celluloid. Formosa is noted for its camphor trees.

Mineral resources. Japan is not rich in mineral resources. The only minerals mined in large quantities are coal and copper. The coal mines have been worked for four hundred years. Japan, with rather small deposits, exports coal to China, which, as we have seen, is supposed to possess more than almost any other country. This is because the Chinese have not developed the rich deposits of their country. Japanese coal is also sent to the western coast of the United States. The Pacific states of our country have very small amounts of coal and are therefore obliged to obtain it from other places. The coal resources of Japan are of great value to her (Fig. 315) in developing her industries and in supplying her many ships with fuel. Many of the coaling stations of the Far East receive their supplies from the mines of Japan.

Only two other countries, the United States and Chile, now produce more copper than Japan. For a long time Japan ranked second as a copper-producing country. The supply, however, is only enough for use within the country. Japan also has deposits of iron ore (Fig. 316). These, of course, are of great value in supplying the raw material for making machinery and ships. The supply of iron is not sufficient for her use. Large quantities of iron and steel are imported from Europe and the United States. Other minerals found in the country are gold, silver, lead, and



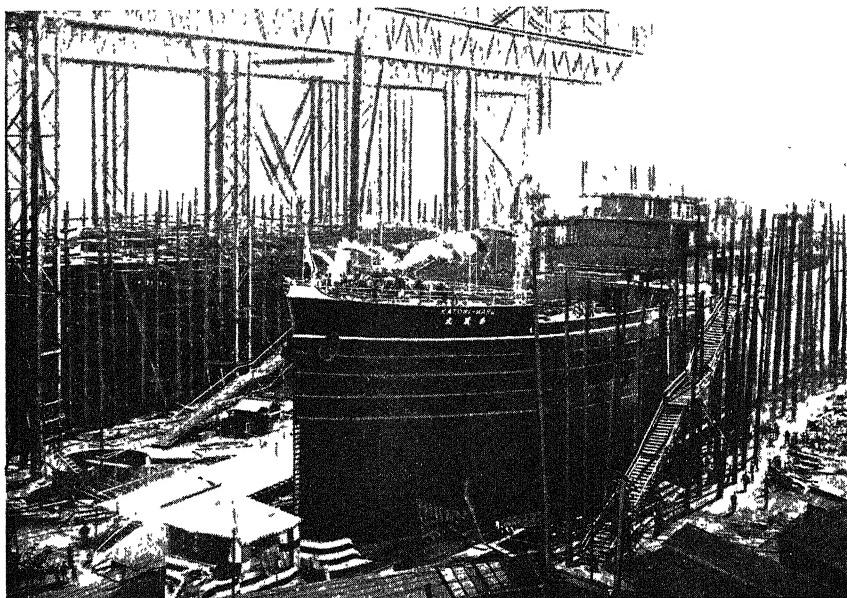
Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 316.—An iron-smelting plant in Japan. Because of Japan's rapid industrial growth she needs much iron and steel for her manufacturing plants and for building ships.

sulphur. The sulphur, which occurs near volcanic regions, is used in making matches.

Japan's growth in manufacturing and commerce. Great Britain, France, Germany, Belgium, and other countries support large populations by means of manufacturing. The Japanese also have developed manufacturing industries, and this is one way by which the large numbers of people are supplied with food and clothing. The Japanese have excellent taste and are very skillful workers. Until recently nearly all the manufactured articles were made in the homes by hand. Even to-day a great deal of handwork is done. Some of the handmade products sent to other countries are porcelain, straw matting, lacquered goods, and toys. Some stores in our larger cities carry nothing but articles made in Japan. In recent years the Japanese have introduced machinery. The best and latest methods of manufacturing used in foreign countries have been adopted by the business men of Japan. Industries of all kinds have developed rapidly. The factories turn out large quantities of cotton and silk goods and metal products. Because of the excellent taste shown in making them, their best products are sold in many other countries. Buyers from the department stores of the United States go to Japan every season to obtain a supply of Japanese silks, cottons, and other goods.

Ships and shipping. The Japanese are building many ships both for their navy and for carrying goods (Fig. 317). Their navy is almost as large as that of France. The number of trading vessels is increasing rapidly. Their ships carry a large part of the goods going to and from China. The Japanese government encourages the building and owning of ships by paying the steamship companies large sums of money. You will recall that



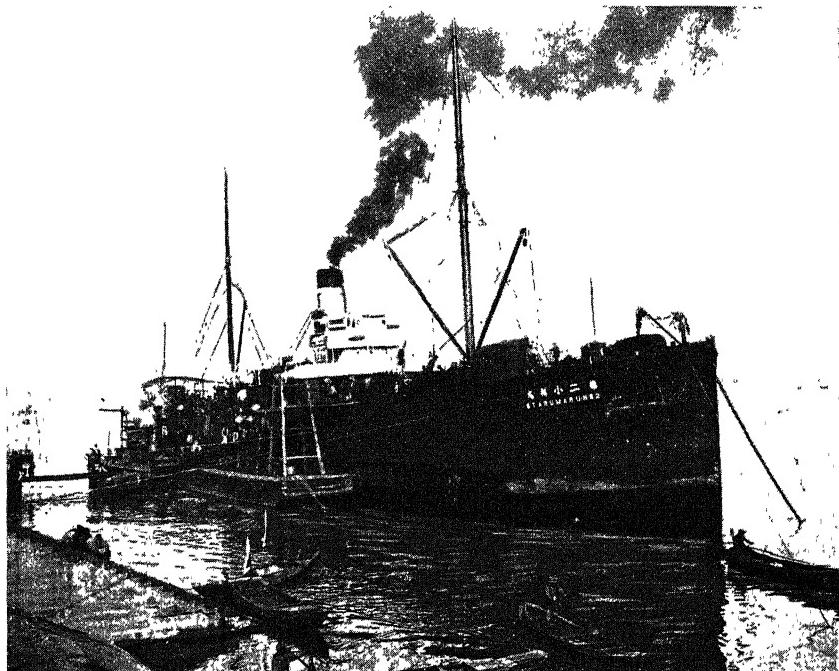
Courtesy American Express Co.

Fig. 317.—A Japanese shipyard. In recent years Japan has built many merchant ships and naval vessels.

some of the European governments also subsidize their shipping companies, as this is called.

The irregular coast line of the country furnishes many excellent harbors for commerce and fishing. Yokohama before the great earthquake of 1923 was the chief port for foreign trade. This city is the port for Tokyo, the capital, as large steamers cannot enter the harbor of Tokyo. Yokohama is on the eastern side of Honshu, thus facing America. The principal trade with the United States and Canada is normally carried on through this

city. The chief port and coaling station on the western coast is Nagasaki. This city has trade with China, Korea, and Siberia. There are coal mines not far from the shore, so that this is an excellent place for coaling ships. The coal is taken on the ships in small baskets carried by Japanese women. The greater part



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 318. — A Japanese freight steamer at Hankow, China. Japanese steamers sail to every continent and thus compete with the merchant ships of all commercial countries.

of the trade with China (Fig. 318) passes through the port of Kobe, one of the most important trading centers of Japan.

Why the production of silk has become an important industry. The raising of the silkworm and the manufacture of silk goods have become important industries in Japan (Fig. 319) for several reasons. First, the mulberry tree thrives there, and the worms must have the leaves of this tree for their food; second, the worms require a great deal of care; and as we have seen, there are many

people in Japan who must be supplied with work. Men, women, and children work for much smaller wages than are paid in almost any other country. Cheap labor makes it easy for the Japanese to compete with the French and Italians in the production of raw silk (Fig. 320). Cheap labor also makes it easy for



Fig. 319.—Sorting silk cocoons. The production of silk requires a great deal of hand labor. As shown here, a great part of the work is done by women and children.

the Japanese to compete with other countries in the manufacture of silk goods.

The manufacture of cotton goods. Cotton goods and cotton yarn are also important products of Japanese mills (Fig. 321). In recent years the cotton industry has grown rapidly. Some raw cotton is obtained from the United States, but much more is imported from India. Only a small amount of cotton is raised in Japan, and that is of poor quality. Much weaving of cotton cloth is done in Japanese homes as well as in the factories. Japan manufactures practically all the cotton goods used at home and

exports considerable quantities. She now sells cotton goods in China for a lower price than most other countries must receive for their goods. For this reason Great Britain and the United States have found it difficult to compete with Japanese cotton merchants in the markets of China. Furthermore, Japanese cotton goods are now on sale in the home markets of the countries which compete with her. If you study carefully the advertisements of the larger department stores, you will probably find Japanese cotton goods mentioned.

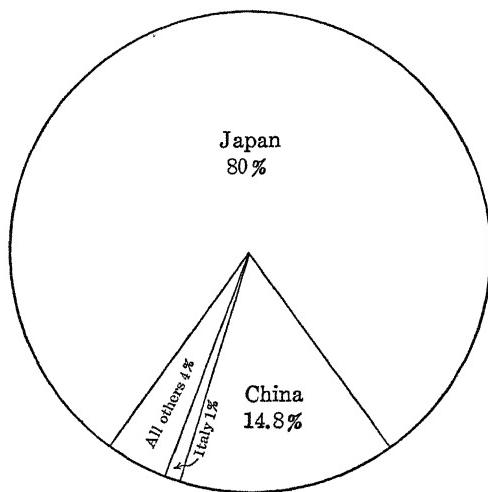
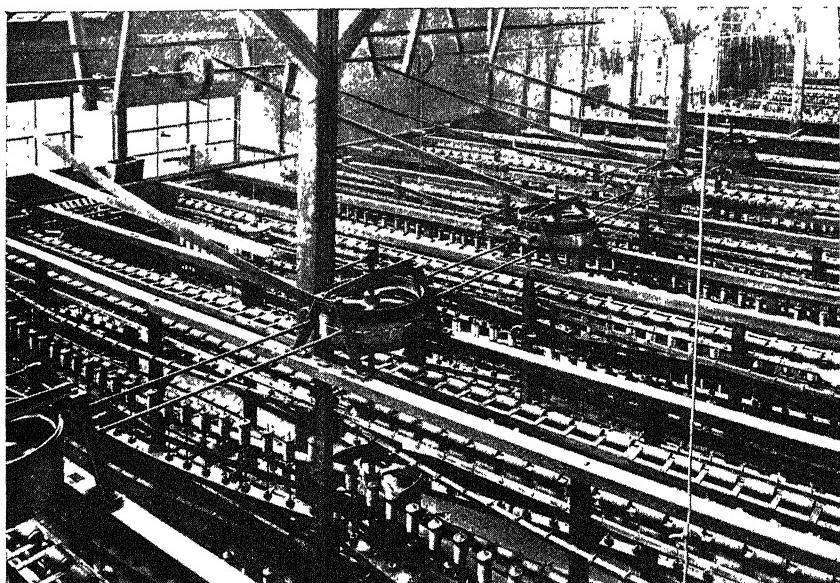


Fig. 320.—The percentage of the world's supply of raw silk produced by Japan, China, and Italy for the year ending June 30, 1926.

Japanese small wares. Other articles which the Japanese manufacture and send in large quantities to other countries are small wares, including quaint toys (Fig. 322), vases, porcelains, and many fancy articles. The Japanese are very skillful in making and decorating these articles and show excellent taste in designing them. Visit a Japanese store the next time you have an opportunity and notice the great variety of articles on sale. The workmen of Japan are experts in the use of lacquer, a kind of varnish which gives a very hard, glossy surface to boxes, trays, or other articles to which it is applied. Here, too, the patience of the workmen is shown. Again and again the lacquer is applied

and rubbed down before the final stage is reached. During the World War when Germany was unable to get her toys and other small wares to foreign markets, the industry in Japan grew by leaps and bounds. You have probably noticed the many Japanese dolls in our toy stores.

Other important products which Japan makes and exports are straw hats and straw braids which are used in making hats.



Courtesy Japanese Government Railways.

Fig. 321.—A modern Japanese cotton mill. The Japanese cotton industry has grown at an astonishingly rapid rate. The products of these mills are now found in the markets of every continent.

The value of these articles sent annually to the United States alone amounts to millions of dollars. In this industry the Japanese compete with the Italian workmen and with the inhabitants of Central and South America who make the famous Panama hats.

Another product which Japan sends to the United States is bean oil, made from soy beans, quantities of which are imported from Manchuria. This oil is used in America for making soaps

and is sometimes used as a substitute for linseed oil in paints. The Japanese use the cake which remains after the oil is removed from the beans as a fertilizer. The bean itself is an important article of food in the Far East. The plant is raised in the United States mainly as a forage crop for cattle and hogs and to plow under as a fertilizer.

Tea raising in Japan. But we must not think that the people of Japan are all engaged in manufacturing. Agriculture is a very



Fig. 322. — A doll store in Osaka. Japanese toys are not only sold in that country but they also find a ready market in foreign lands. During the World War the Japanese toy industry developed rapidly.

important occupation. Since there are very many people in these small islands to be provided with food and clothing, the land must be made to produce as much as it possibly can. Only one-sixth of the land can be cultivated; therefore we find the Japanese cultivating land intensively. Bean cake and fish are used as fertilizers and great care is given to the growing crops. In the southern parts of the islands, where the growing season is long, several crops per year are raised on the same ground.

Of the agricultural products tea (Fig. 323) and rice are the leading crops. The tea grown in the island of Formosa is considered by many the best in the world. India, China, and Ceylon are the only tea-producing countries which export more tea than Japan. Tea, like silk, can be easily raised in Japan because it requires cheap labor. It also requires a warm, moist climate. Tea plants are grown chiefly on the hillsides because the plant thrives



© Burton Holmes, from Ewing Galloway

Fig. 323. — Picking tea in a large Japanese tea garden. Notice that the shrubs are planted in long rows far apart so that there is plenty of room for the workers to move about. By whom is the work being done? Why?

best where there is good drainage. Take a small amount of tea in the palm of your hand and think of the number of people and the time it must take to gather and dry fifty million pounds of these tiny leaves, for this is about the amount which Japan exports each year. Remember that all of these leaves must be picked by hand and in Japan and China a part of the curing consists of rubbing the leaves in the palms of the hands. The tea plants can be grown in the southeastern part of the United States, but

labor is so much cheaper in the Far East that it is wiser for us to import our tea than to raise it ourselves. Great Britain and Russia are the great tea-drinking countries of the world. The United States ranks third.

Why Japan produces much rice. Rice, the other important farm crop of the Japanese, is one of the chief articles of food of the country. As a food crop it is well adapted to densely settled



Fig. 324. — Threshing rice by hand. Here the rice is brought in from the field by hand and is threshed by drawing the stems through long metal teeth attached to a wooden frame. How does this compare with methods of harvesting in the United States?

countries, because an acre of land will produce more pounds of rice than of wheat or other grains. The cultivation of rice requires a great deal of care in irrigating the land, planting the seed, and transplanting the seedlings. Rice is planted on land which is flooded with water because the plant in its early stages requires a great deal of moisture. Patient labor is required, especially in hilly regions where many terraces are made so that all the land which is planted will be level, and the water will be

everywhere of the same depth. In hilly regions, also, water must often be pumped or carried to the highest level, from which it flows to lower and lower terraces. On lower lands the water is turned from a stream flowing from the hills and led through ditches to the rice fields. As the harvest season approaches (Fig. 324), the water is withdrawn and the land becomes dry and ready for the cutting of the grain. Much of the Japanese rice is exported. Millions of pounds are brought to the United States every year. In place of the rice which they export the Japanese import large quantities of cheaper rice from India for their own use.

Fishing an important industry in Japan. The Japanese eat little or no meat, cheese, or butter. In place of butter they use bean oil, just as in Mediterranean countries olive oil is used. The land is so intensively cultivated that there are few places for cattle and sheep to graze. Moreover, the demand for food by the millions of people is so great that land must not be used to provide food for animals. Besides, the farms are small and the work is done by the people and not by animals as in less densely settled countries. Fortunately on all sides is the sea, in which there is an abundance of fish of all kinds. Not only do the fishermen of the country visit the waters surrounding their own islands, but many vessels are sent to fishing grounds near the mainland. The fish thus obtained make a very important part of the food of the Japanese. As we have seen, fish are also used as fertilizer, and thus in another way add to the wealth of the country.

Why Japan is interested in China. Japan is naturally deeply interested in the development of the industries and commerce of the mainland of Asia. Japan has a very dense population which must be provided for. Moreover, the resources of the country are not very large, and the islands that make up the Empire do not allow opportunity for growth. Therefore, if Japan is to become a powerful nation, as she hopes to be, she must have more territory and control resources besides those of her own islands. No doubt the Japanese also feel that if eastern Asia is controlled by strong European nations, Japan may not be permitted to share in the development of the industries and commerce of the region.

Japan might also be in greater danger of attack than she is now if China were divided among the great powers of Europe.

In 1895, as a result of war with China, Japan compelled China to recognize Japan's rights in Korea, or Chosen as the Japanese now call it. After the war, Japan acquired more and more control over Korea, until in 1910 it was formally made a part of the Japanese Empire. As a result of the same war, Formosa, or Taiwan, and other minor possessions were added to the Empire. The treaty of Versailles placed under the control of Japan the islands in the Pacific Ocean north of the equator that formerly belonged to Germany.

Relations with other countries. Japan's rapid growth in industry and trade, together with her successful wars with Russia and China, has greatly increased her influence with other nations. Moreover, Japan is constantly adding to her military strength. We have already seen how rapidly the country has added to its territory as a result of wars.

As a country increases in area and influence, its interests are almost sure to conflict with those of other countries. Japan has already found that its increased control in China is not looked upon with favor by some of the other nations.

Trade with the United States. Japan carries on more trade with the United States than with any other country. Our chief imports from Japan are silks, tea, rice, porcelains, and straw braid for making hats. Our leading exports to that country are cotton, wheat, flour, petroleum products, and manufactures of iron and steel. Our trade with Japan is increasing at a rapid rate.

QUESTIONS AND PROBLEMS

1. In what ways is the location of Japan similar to that of Great Britain? Which do you think has the better location? Why?
2. What part has America played in helping Japan to become a progressive nation?
3. What resources of Japan have aided greatly in the development of the country?
4. What conditions in Japan have favored the development of shipbuilding and commerce?
5. Why does the production of silk thrive in Japan better than in almost any other country?

6. Why do other countries have difficulty in competing with Japan in the manufacture of textiles?
7. In what products of the country are the skill and taste of the people particularly shown?
8. Why is it necessary to build terraces when rice is raised in hilly regions?
9. How does it happen that the Japanese eat much more fish than we do?
10. What parts of the mainland of Asia are owned or controlled by the Japanese?
11. Of what benefit is it to the Japanese to control parts of the mainland?
12. Why have the United States and European countries reason to fear competition with Japan?
13. How do you explain the rapid increase in the trade between Japan and the United States?

SUGGESTED PROJECTS AND EXERCISES

1. Make an outline map of eastern Asia and color all parts belonging to Japan.
2. Make a collection of Japanese articles that show the skill and taste of the people.
3. Make a list of Japanese articles on sale in the stores of our cities and advertised in our papers.
4. On an outline map of the world trace the steamship routes from important Japanese ports to ports of the Pacific and Atlantic coasts of the United States and other ports of the world.
5. Appoint a committee to report to the class about "Our trip to Japan," one telling about the Japanese house, one about the Japanese schools, one about Japanese travel, and one about Japanese customs, etc.
6. Represent scenes typical of Japanese life and industries.

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PART V
LATIN AMERICA

CHAPTER XXXIII

A LAND OF OPPORTUNITY

WHAT is Latin America? If we were to visit South America, Central America, Mexico, or the West Indies, we should find the people almost everywhere speaking Spanish, Portuguese, or French. This is because these regions were discovered and settled mainly by these races. All these people belong to the Latin race and these lands which they settled have come to be known as "Latin America." By far the largest part was settled by Spain, hence the Spanish language is the one most commonly used. Brazil was the most important Portuguese colony, and Portuguese is the language of Brazil to-day. In recent years large numbers of Italians, Germans, Englishmen, and North Americans have made their homes in Latin America. Small numbers of English, French, and Dutch live in the Guianas.

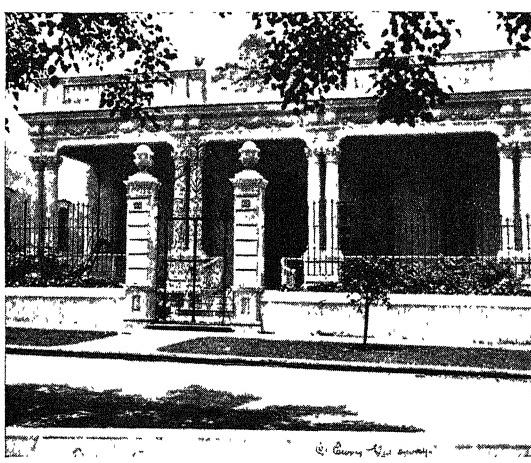
In addition to these European peoples there are in many of the countries native Indians, African negroes, and people of mixed races. The African negroes were originally brought as slaves to work upon the plantations. To-day they make up the larger part of the population of the West Indies.

How the climate influences these people. Most of the lands lie in the wet, torrid belt. The most progressive countries of the world are in the temperate zone, where man has to work hard for his living. No true progress is made without hard work. In tropical regions under easy conditions of life man is not likely to develop habits of industry, economy, thrift, and ingenuity. Without these there will be but little progress.

Again in the hot, moist climate of these torrid regions men do not have as much energy as in the colder regions of the world. We say that the cooler climate has an invigorating effect and that the climate of the torrid zone is debilitating. The hot climate is

also more likely to be unhealthful. It is therefore easy to see how climate has hindered progress in many of the Latin-American countries. The most progressive peoples of these countries live in the more temperate sections.

Why Europe is interested in Latin America. If we were to visit the cities of Latin America, we should find many of them more European than American. Havana, for instance, has all the appearance of a Spanish city (Fig. 325), which it really is, in spite of the fact that it is only about a hundred miles from



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Fig. 325.—A beautiful residence in Havana. The style is distinctly Spanish. There are many such buildings in the cities of Latin America.

all these countries. We are not surprised, therefore, to find the Latin-American peoples strongly drawn to their European kinsmen. Long years of close commercial relationship have tended to establish a large trade with Europe. This has been a disadvantage to our own merchants in their efforts to build up trade with Latin America.

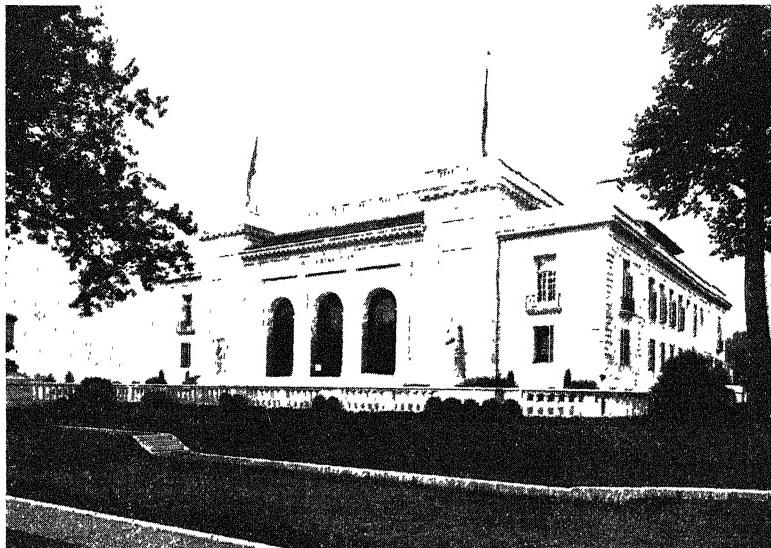
The Pan-American Union. During recent years an organized effort has been made by the people of the two Americas to bring about closer relationships. The Pan-American Union has been formed for the express purpose of creating stronger bonds between these peoples. Its principal headquarters are in a beautiful

Key West in Florida. Many other cities are as strongly Spanish as Havana, and country districts are as truly Spanish as the cities.

All these lands have attracted many other immigrants besides those from Spain, and much European capital has been invested in Latin-American enterprises. These immigrants and this capital have greatly helped the growth of

building in the city of Washington erected as a home for this organization (Fig. 326). If you wish to learn about any special question relating to Latin America, the Pan-American Union will always be ready to give you information. Perhaps some such question will come to you as you read this chapter.

The Panama Canal. Before the Panama (Fig. 327) and Suez canals were built, vessels from the Atlantic coast of North America

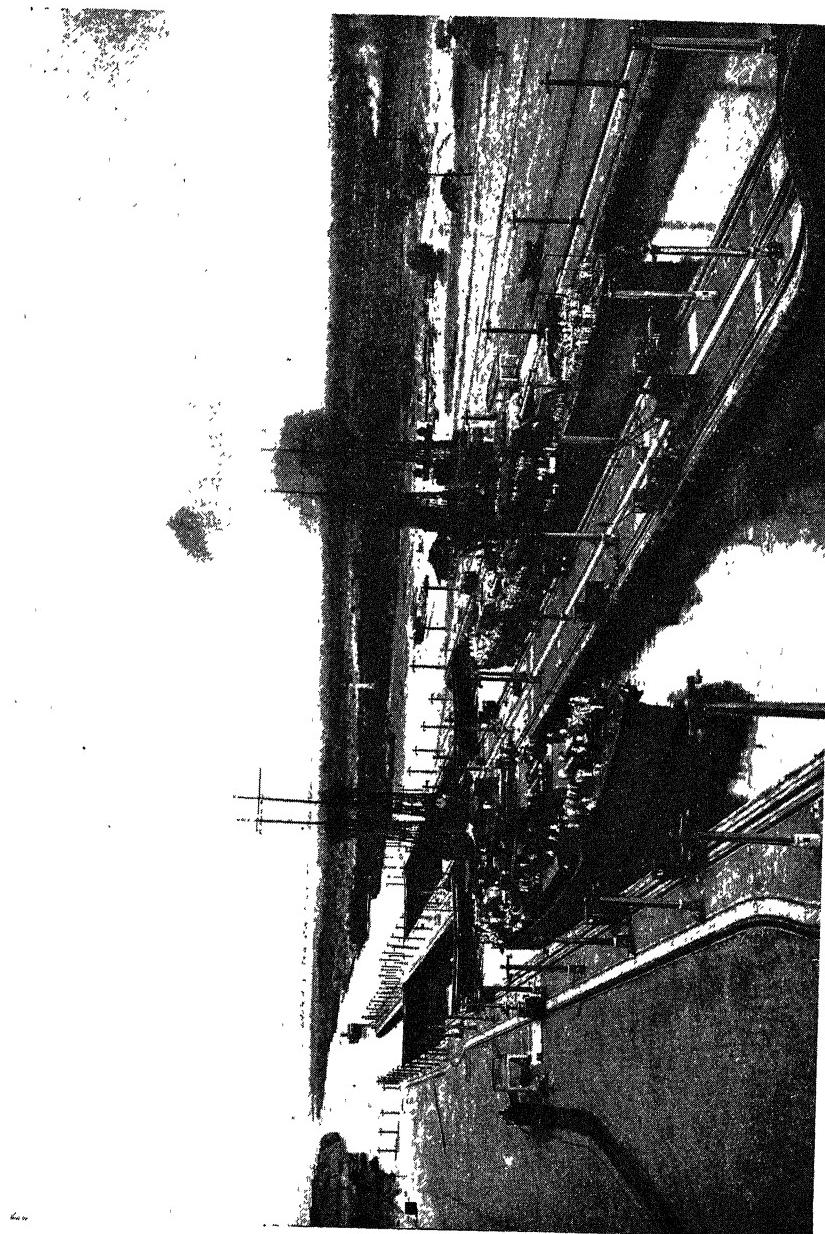


Courtesy Pan-American Union

Fig. 326.—The Pan-American Union building in Washington. This beautiful building is located in an attractive section of the city and is headquarters for everything pertaining to Pan-America. It is always of interest to visitors in Washington.

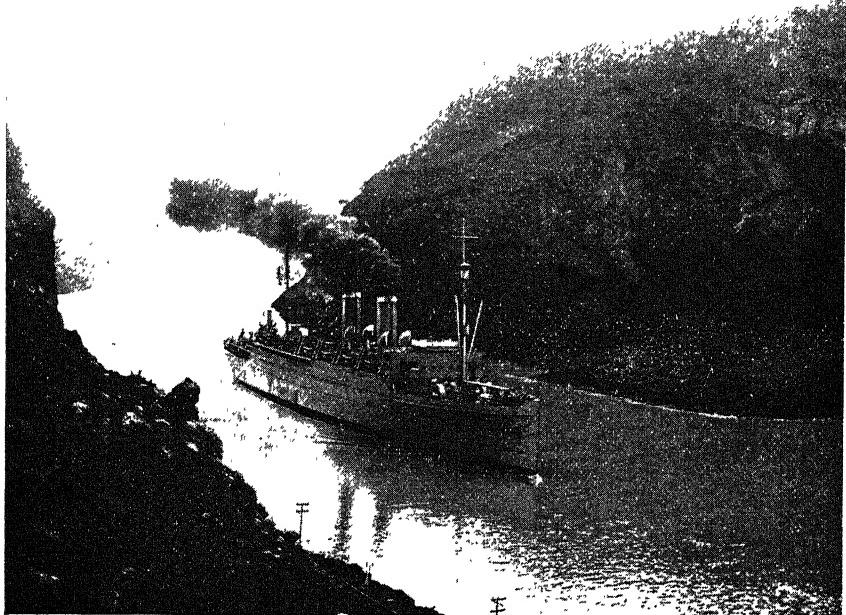
and Europe were obliged to go around either Cape Horn or the Cape of Good Hope to reach the Pacific Ocean. If you will study your world map or a globe, you will see what long journeys these were and what great distances are saved by these canals. The saving thus made is a matter of great importance to commerce. The building of the Panama Canal by the United States has tended to bring the two Americas into closer relationship.

It was a great undertaking to dig the canal, the construction of which was a marvel of engineering (Fig. 328). Yellow



Courtesy Panama Canal Office.
Fig. 327.—Two United States naval vessels in the Gatun Locks on their way through the Panama Canal. By these locks the vessels are lifted from the level of the Caribbean Sea to that of Gatun Lake. They are towed through the locks by electric locomotives shown in the picture. In what direction are the vessels journeying?

fever and malaria were serious obstacles on the isthmus, these had to be brought under control before men could do the work on the canal. This was done by destroying germ-bearing mosquitoes and by providing pure drinking water, good sewage systems, clean streets, and healthful living conditions. This was a much-needed



Courtesy Panama Canal Office.

Fig. 328.—A large steamship passing through a deep cut in the Panama Canal. These hills were cut away in making the canal. Why do ships pay toll in passing through the canal? Why was the canal built?

object lesson for other parts of Latin America where similar unhealthful conditions prevailed. Many places have followed the example of Panama and have been successful in their fight against disease. The United States has, therefore, helped South America to improve its health as well as to increase its commerce.

The Monroe Doctrine. Many of the Latin-American countries are so near to the United States that we are naturally much

interested in all that they do. Whatever affects their welfare is of importance to us. Nearly all of these countries have a republican form of government patterned after that of the United States. We are anxious to see all American republics successful, for that helps democracy everywhere. The United States has objected to further colonization in America by any European or other foreign power. This is what is known as the *Monroe Doctrine* and is quite as much for our own benefit as for that of our Latin-American neighbors. This doctrine was declared in 1823. At that time there was danger that European powers would attempt to gain possession of some of the Latin-American countries, as this was about the time that their independence was won and they were weak, new nations. Why does the United States object to further European settlement?

Our treatment of Cuba. Latin Americans have sometimes been a bit suspicious of the United States. They have thought it possible that we might take some of their territory from them. This the United States has no desire to do.

When our country took up arms against Spain in 1898 to help the suffering Cubans win their independence, many people in Latin America and in Europe believed that our plan was to annex Cuba. Instead of this our army was promptly withdrawn at the close of the war, and we helped the Cubans to organize their new government, which they patterned after that of the United States.

Our government promptly recognized the independence of Cuba. It insists, however, that a strong government shall be maintained in the island, and that foreigners shall be protected in all their rights. This country still claims the right to intervene in case of disorder.

Our treatment of Cuba has done much to convince our Latin-American neighbors that we do not care to annex their territory.

THE CARIBBEAN LANDS

What are the Caribbean lands? A glance at your map (Fig. 329) will show that the waters of the Caribbean Sea wash the shores of the West Indies, Venezuela, Colombia, Central America, and a part of Mexico (Yucatan). These are known as the Carib-

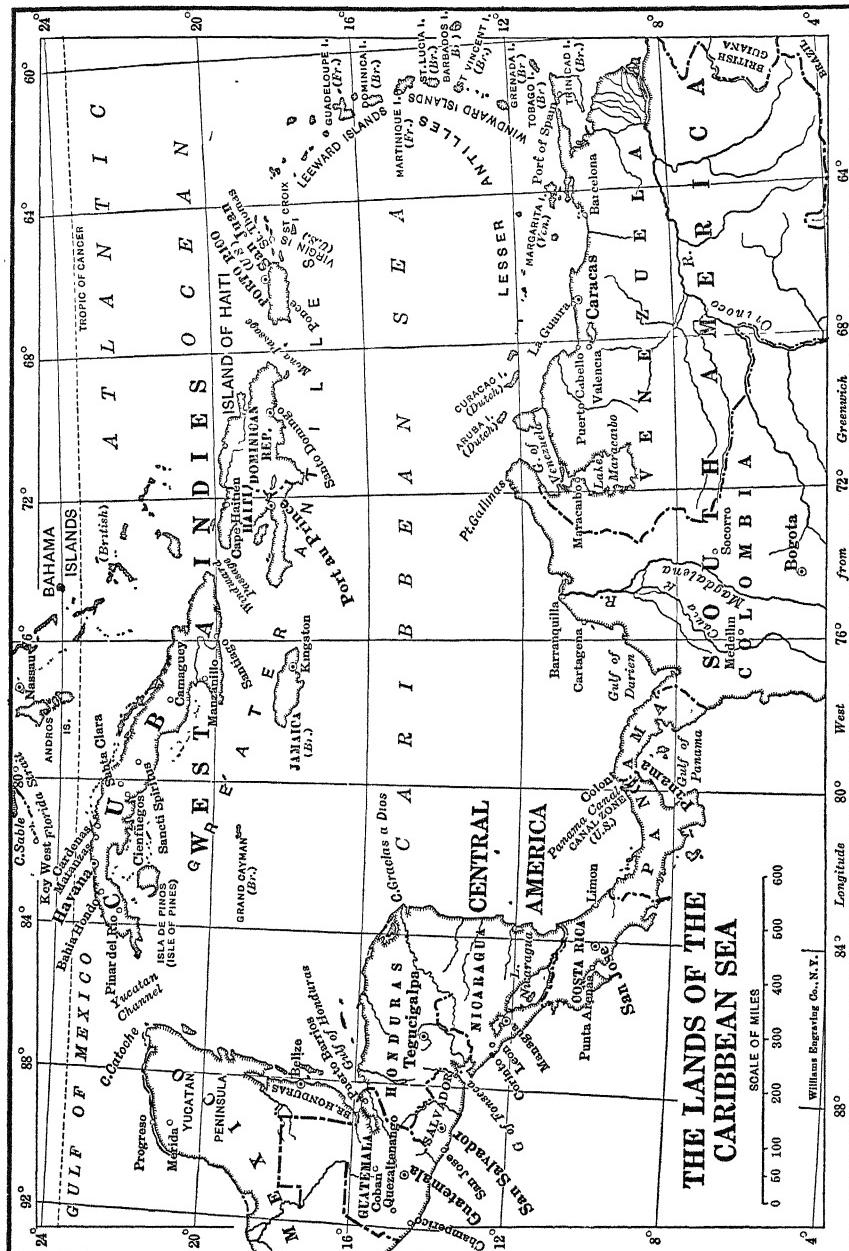


Fig. 329.

bean lands. They include several independent countries and European colonies. The United States owns Porto Rico, some of the Virgin Islands, and the Panama Canal Zone, and exercises considerable influence in the affairs of Cuba, Haiti, and the Dominican Republic. Locate these places.

Why the Caribbean lands are important. A warm, moist climate gives these lands wonderful producing power. The

region has sometimes been called the "garden spot of the tropical world." Tropical products are of ever-increasing importance to all parts of the civilized world. No region supplies larger quantities of these than the Caribbean lands. Since early settlement days the region has been extensively engaged in commerce. We have learned that our own country began its West Indian trade at a very early date.

Fig. 330. — Sugar cane cutters at work on a Cuban plantation. These plantations are often hundreds of acres in extent. Each plant is taller than the man who cuts it. The women are collecting the stalks. These stalks are hauled to the mill, where they are crushed between rollers to extract the juice.

recent years the large production of beet sugar in the temperate zone has checked the increase of sugar cane production in tropical lands. Cuba, however, is still the most important sugar-producing country of the world (Fig. 69). Increased attention is now being given to the cultivation of tropical fruits. This is particularly true of the banana. This wholesome fruit grows



© Keystone View Co.

Practically all these lands are engaged in raising sugar cane (Fig. 330), but in

abundantly (Fig. 331), with comparatively little care, in nearly all these regions. It has become a very important article of export (Fig. 332). To-day the bananas are supplied to all parts of our own country in excellent condition and at moderate cost. Oranges are also produced in large quantities. Much American and European capital is invested in fruit plantations throughout these regions and in steamship lines for transportation of fruit



Courtesy Pan-American Union.

Fig. 331.—Gathering bananas on a plantation in Costa Rica. This is such a large plantation that it has its own railway for transporting fruit to the shipping centers.

Some of the other products are coffee, cocoa, rice, tapioca, ginger, nuts, cotton, sisal, rubber, and tobacco. Many beautiful cabinet woods, such as cedar, rosewood, and mahogany, come from various parts of these Caribbean lands.

Characteristics of Caribbean trade. The Caribbean lands have but little exchange of goods among themselves. This is because their products are all so much alike. Their trade is almost wholly with the United States and Europe, much the larger part



Courtesy United Fruit Co., Boston.

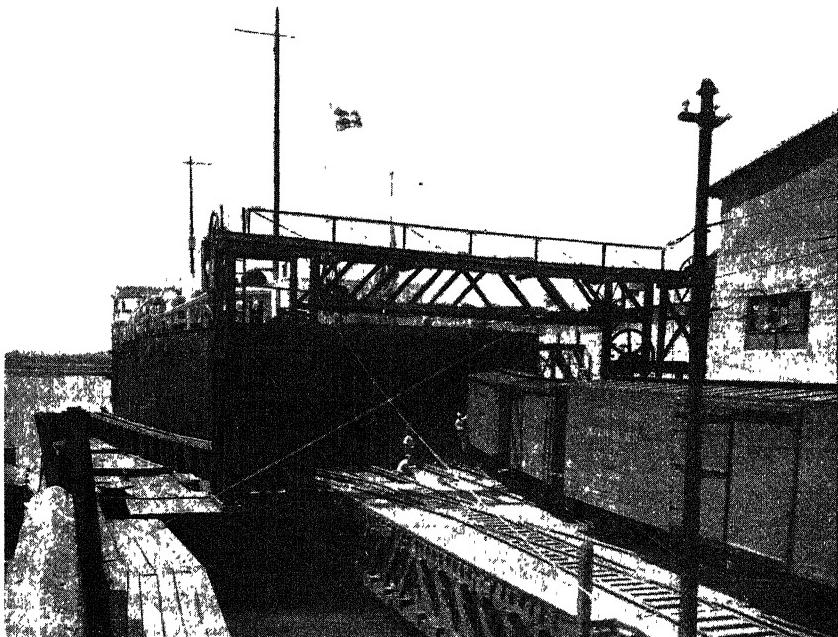
Fig. 332. — Where our bananas come from.

being with our country. It is mainly an exchange of their tropical products for those of the temperate regions.

Manufacturing does not thrive in these hot countries. For this reason breadstuffs, cotton goods, machinery, and other manufactured articles of many different kinds make up the bulk of all imports. Many lines of steamers from Europe and the United States are engaged in carrying on this profitable trade.

Trade with the United States. With a population of over 100,000,000 people in the United States, the demand for goods from tropical lands is very great. On the other hand we are large producers of all the different kinds of goods that tropical countries must obtain from the cooler parts of the world.

Our country is the nearest temperate-zone neighbor to these lands. We are so near to Cuba, for example, that freight cars loaded anywhere in the United States can pass by ferry from Florida to Cuba and reach their destination upon the islands without having to unload while on the journey (Fig. 333). Cargoes



Courtesy Florida East Coast R. R. Company.

Fig. 333.—This ferry boat carries loaded freight cars between Key West and Cuba. Of what advantage is this to Cuba and to the United States? The freight cars in the picture are just being run on to the ferry.

from Cuba can be sent to the United States in a similar manner. This system can be extended easily to include several of the other islands. Freight can also be sent direct by rail to Mexico and Central America. All this is, of course, a great advantage to the commerce of our country with these tropical lands. It therefore helps us to understand why the Caribbean trade with the United States is much larger than with any other country.

MEXICO

Mexico our near neighbor. The territory of Mexico borders upon that of the United States. This fact gives our people a special interest in this Latin-American country. For a century Mexico has been an independent nation with a republican form of government. During this century, particularly in recent years, there has been much civil strife among the people. Revolutions have been frequent and bandits have often terrorized the land. Hundreds of our people have been killed upon our own borders. Much property has been destroyed and many Americans who lived in Mexico have lost their lives. All this has tended to make trouble, and it has not always been easy to keep the peace. Two friendly nations should not allow such conditions to continue, and both the United States and Mexico are trying to improve them.

What Mexico needs. The present population of Mexico is about 15,500,000. Of this number not quite one-fifth are white people of Spanish descent. About two-fifths are Indians, and the rest are a mixed race called *mestizos* who regard themselves as the real Mexicans. The Indians, in the main, belong to the lower class and are quite generally poor and uneducated. The Indians and portions of the *mestizos* make up the laboring class known as *peons*. It is not an easy matter for a mixed population like this to work together in the establishment of a stable government. If this is to be accomplished, two things are especially necessary. More attention must be given to popular education, and more people must own their homes and farms.

Considerable progress has been made in education. Many public schools, patterned after those of the United States, are being organized. The government has sent many students to our country to study our system of education so that they may be able to improve their own. Schools are being established for the Indians as well as for the other races. This is as it should be, but much more is yet to be done.

Comparatively few people own their homes or farming land. Ownership of property leads people to have an interest in it, to

work hard to take care of it, and to want a strong government to protect it. This is a reform that our people hope to see in Mexico, for without such ownership lawlessness is encouraged. Mexico's racial conditions make such problems difficult to solve.

The natural wealth of the state. In spite of the unsettled conditions that prevailed in Mexico, the foreign trade for 1920 amounted to \$380,000,000. This means that the country must have great resources and would progress rapidly if a strong government by well-educated people could be maintained.

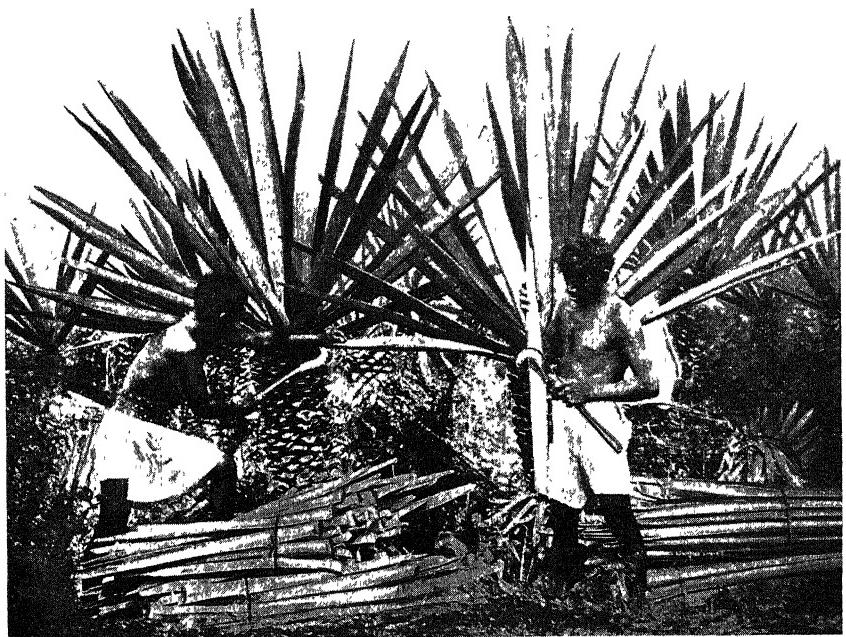
During the World War Mexico supplied to the Allies a large part of the petroleum used. In 1922 she produced over twenty-one per cent of the world's supply. The country about Tampico and Tuxpan is especially rich in oil. About four-fifths of the product is exported to the United States. The country is marvelously rich in minerals of various kinds. These minerals constitute the largest source of Mexican wealth. The country ranks high in the production of copper and is very rich in silver and gold. Nearly \$500,000,000 have been invested in Mexican mines by citizens of the United States.

Mexican forests yield many beautiful hardwoods so highly prized in our own and other countries. Among these are mahogany, ebony, rosewood, and logwood.

Development of agriculture. Mexico has a varied climate and therefore a varied agriculture. Crops requiring a temperate climate, especially corn, are raised upon the dry central plateau for home use. On the eastern slope of the mountains and the narrow plain bordering the Gulf it is warm and moist. Here many tropical products abound. Sugar, tropical fruits, and vanilla beans are exported from these sections.

In Yucatan sisal or henequen is extensively cultivated (Fig. 334). The fibers from the leaves of this plant are used in the United States and other countries for making twine, rope, bagging, and other coarse cloth. Our binder twine for harvesting machines is largely made from these sisal fibers. Progreso, in Yucatan, is the most important center in the world for the shipment of this useful textile material. The United States takes the larger part of it.

Condition of industry. Mexico is not a manufacturing country. There is but little coal for power, and the people do not take kindly to manufacturing. A few cotton factories, however, have been established. The people depend upon the United States and other countries for most of their manufactured goods and for



Courtesy International Harvester Company.

Fig. 334. — Cutting leaves from the henequen plant to be manufactured into sisal fibers. The plant grows in warm, arid regions and requires little care other than the cutting away of rival plants.

much of the capital needed in running the mines, railroads, and factories.

CENTRAL AMERICA

The name "Central America" is applied to that group of small countries occupying the narrow strip of territory between Mexico and South America. In the main it is a tropical region very similar to Mexico and may be regarded as the southern extension of that country. It is especially noted for its production of tropical fruit. The lowlands along the coast are particu-



larly well adapted to this kind of agriculture. In recent years much money from the United States and other countries has been invested in tropical fruit farms of this region. This fruit finds a large and ready market in our own country.

SOUTH AMERICA

A continent of undeveloped resources. South America is truly a land of promise. Its population is relatively small, but its resources are very great. The continent already plays an important part in the business of the world, but this should be much greater in the future than it is to-day.

In parts of the interior among the mountains and upon the uplands there are vast areas of fine grazing lands and there is also much fertile soil for farming.

The Andean countries constitute one of the richest mineral regions of the world. While mining has been carried on in this region for many years, the industry is still in its infancy. Brazil is said to have one of the largest iron-ore deposits in the world, but as the country has but little coal, large amounts of the ore are exported each year.

The valuable forests of the continent are only partly used at present. These are capable of furnishing not only lumber but many other useful products.

Although the continent has but little coal, the water power is excellent. This may mean much in the future when manufacturing comes to be more important than it is at present. The continent is now mainly in the agricultural stage.

Where the people live. If you will take your map of South America (Fig. 338) and study the location of the cities and larger towns, you will doubtless be surprised to find that many of them are far up among the mountains and plateaus of the Andean highlands. Such important cities as Caracas, Bogota, Quito, and La Paz are found here. The last named city is two and a half miles above sea level. In this continent the mountains seem to be especially attractive as dwelling places. This is because most of South America is in the hot part of the earth. These mountains and plateaus are so high that they are cool and comfortable.

Many of the products of the temperate regions are grown in these highlands. There is no other place in all the world where farming is so extensively carried on at such great heights as in the Andean region.

Large flocks of llamas, alpacas, and sheep are raised. The little llama furnishes both wool and meat and is a most useful animal as a beast of burden. Great numbers of them are used for carrying goods over the rough mountain roads.



Courtesy Pan-American Union.

Fig. 335. — This railroad is in Colombia among the Andes Mountains. What does the picture suggest concerning the cost of railway construction in such a region? Why have not more railways been built? Why is the engine using so much steam? How are such roads helping the Andean cities?

A few railroads have been built into this high country from the Pacific coast. These roads keep the people in touch with the outside world and bring them the needed goods from abroad. Study your maps to see what railroads have been built into this rugged region where railroad construction is very expensive (Fig. 335).

Few people have made their homes in the great Amazon lowland because it is too hot, wet, and unhealthful. If you will

study your maps, you will find that Manaos (Fig. 337) is the only interior town of large size in all the great Amazon country. Perhaps you can find out how it happens to be located where it is and what its principal business is.

What South America needs. The progress of the continent has been slower than that of North America mainly because of

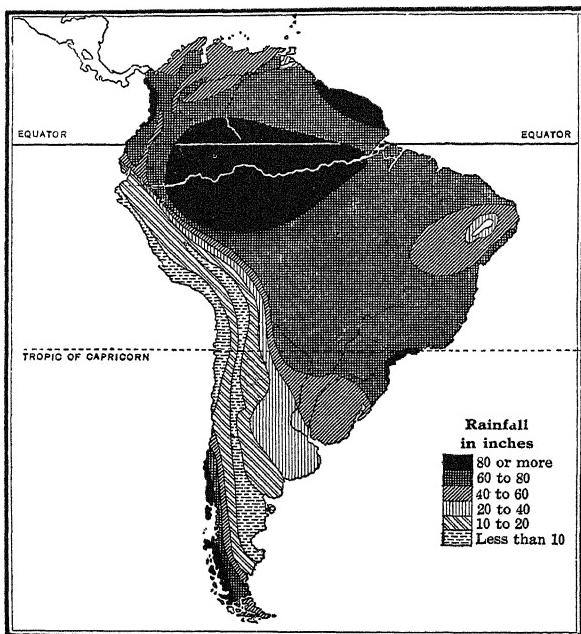
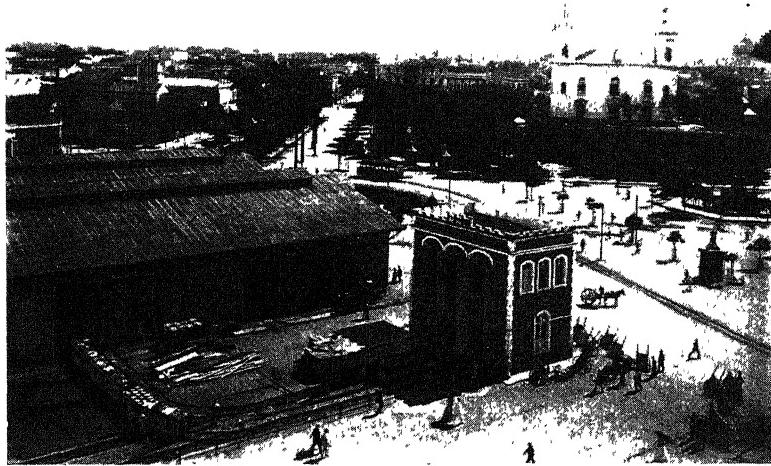


Fig. 336. — Average annual rainfall of South America. Account for the regions of heaviest and of lightest rainfall.

its unhealthful tropical climate. The people of South America have not given so much attention to popular education as we have in our country, and are therefore backward in industry and government. The lack of education is always a check to progress. The South American countries have had many revolutions since they won their independence a century ago. Unstable governments have doubtless hindered progress greatly. Capitalists do not readily invest money in countries whose governments are too weak to protect their property.

For this reason many of the resources of Latin America remain undeveloped.

The greatest needs aside from popular education and stable government are railroads, capital, and workmen. Many railroads have already been built in the more progressive sections. Foreign capital, especially English and American, has helped in the building of these roads. Plans are now being completed for



Courtesy Pan-American Union.

Fig. 337. — The city of Manaos on the Amazon. The one great topic of conversation in this city is "rubber." Why? What is the nature of its trade? It does not ship its goods by rail. Why not? Why must it import materials for electric railways and for making modern buildings?

a great international railway to extend from the United States to southern Chile. Parts of this road are already completed. Can you tell which parts?

With all the work to be done in building up South American enterprises, many more workmen will be needed. These must come, as they have in the past, from foreign lands. Without such help from its neighbors, South America will be unable to make the desired progress. With it and the needed capital, great prosperity seems assured.

QUESTIONS AND PROBLEMS

1. In what ways is your life influenced by Latin America?
2. How do other parts of the world depend upon Latin America?
3. Why should the United States and Latin America cultivate close relations? What is being done to bring this about?
4. How has our treatment of Cuba helped to strengthen friendly relations with other Latin-American states?
5. What parts of Latin America are most progressive? How do you account for this?
6. Bananas are in much more general use in the United States now than they were forty years ago. How do you account for this?
7. How has the raising of beets in Europe resulted in fruit growing in Jamaica?
8. How did the building of the Panama Canal influence the health of Latin America?
9. How does it happen that much foreign capital is invested in Mexico? What are the possible dangers resulting from such investments?
10. What important products of Central America are supplied for our use?
11. Why are there so many important cities upon the Andean highlands?
12. In what ways is South America dependent upon people of other lands?
13. In what sense is Latin America a "land of opportunity"?

SUGGESTED PROJECTS AND EXERCISES

1. Make a collection of articles from the Caribbean lands, label them, and arrange as an exhibit. Tell how each is produced and write a brief statement showing the importance of each, both to Latin America and to us.
2. Make a scrapbook containing pictures and literature relating to Latin America.
3. On an outline map indicate important products of Latin America. Show by colored lines the routes by which each finds its principal market. Which countries of Latin America are benefited most by the Panama Canal?

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CHAPTER XXXIV

BRAZIL: A LAND OF GREAT RESOURCES

Natural regions of Brazil. The hot, moist climate of the great Amazon Valley gives that vast region a remarkably rich and rapid growth of forests. So rapid indeed is this growth that man



Photo from Scientific Age.

Fig. 339. — A tropical scene such as is common in the Amazon Valley. Amazon jungles are often more dense than this. Why is it difficult to keep such land clear for agriculture or transportation?

has found it almost impossible to clear the land and keep it under cultivation. One reason why railroads are not built in this region is that plants grow so rapidly that it is practically impossible to keep the roadway clear of vegetation (Fig. 339). In times of heaviest rains large areas of this forest land are flooded. Here natives build their huts on poles some distance above the ground beyond the reach of the water.

The great Amazon itself is so large that ocean steamers can ascend it for more than 2000 miles. Many of the branches are very large rivers. The Amazon and its branches furnish the only possible highways for much of the country. So little is known of this wild region that no longer ago than 1913 a new river, a branch of the Madeira, seven or eight hundred miles long was discovered by an exploring party headed by ex-President Roosevelt. This is called the Teodoro River in honor of its discoverer.

You can readily see that such a country as this can be of comparatively little value to man except for those products which the wild forest itself produces. What are these products?

The great Amazon Valley occupies the northern and western parts of Brazil. The Plata and its branches drain the southern part. The Brazilian Highlands are in the east and are the most valuable part of Brazil. The southern portion of these highlands reaches into higher latitudes and is cool enough to be visited by an occasional frost. It is in this part of Brazil that most of the people live.

In central and southern Brazil are the rich grasslands where many cattle are raised. This is one of the sections sure to be benefited greatly by railroads which will be built to connect it with the cities on the coast.

Why Brazil has not progressed more rapidly. Brazil, with an area equal to that of the United States and a population about one-fourth as great, has a commerce only one-seventh as large as that of our country. There are several reasons for her lack of progress. Probably her greatest disadvantage is the hot, moist climate of the greater part of the country. The Amazon Valley is so unhealthful that all work must be done by native Indians or half-breeds. Another great disadvantage is lack of coal. Brazil has no good coal of its own. All coal imported must be brought from great distances, most of it coming from Great Britain. For this reason the people do relatively little manufacturing and are obliged to buy a large part of their manufactured goods from other countries. Moreover, many of the people in the sparsely settled regions are Indians or half-breeds and are not at present capable of developing the resources of the country.

Although Brazil has few manufactures, the country has other resources which make a profitable trade with other countries possible. Several of her products are so useful that other nations are very dependent upon her.

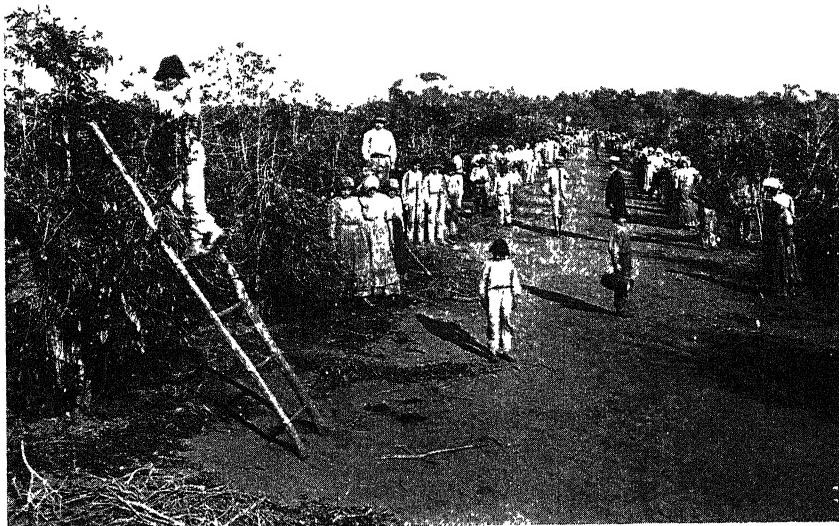
Coffee the chief product. Coffee is the most valuable export. Nearly all the coffee is raised in the southeastern part of the



Fig. 340. — The coffee-producing areas of Latin America. What part of the world's production does Brazil supply? How many pounds?

country not far from the cities of Santos and Rio de Janeiro from which it is exported (Fig. 340). Here, on rolling highlands near the border of the torrid zone receiving abundant rain from the southeast trades, is the most important coffee-growing region of the world. Some of the plantations are so large that different parts are connected by railroads which carry the workmen (Fig. 341) to and from their work and also transport the coffee. So much coffee is raised in this part of Brazil that at times it has been difficult to find a market for all of it.

Coffee is thought to be a native plant of Abyssinia. Besides being raised in Brazil it is also produced in other parts of Latin America, in Arabia, in India, and in Ceylon. Although it can be grown in many countries, three-fourths of the world's crop is raised in Brazil. That country could easily produce several times as much as it does. Even the varieties which we call Mocha and Java are grown in Brazil.



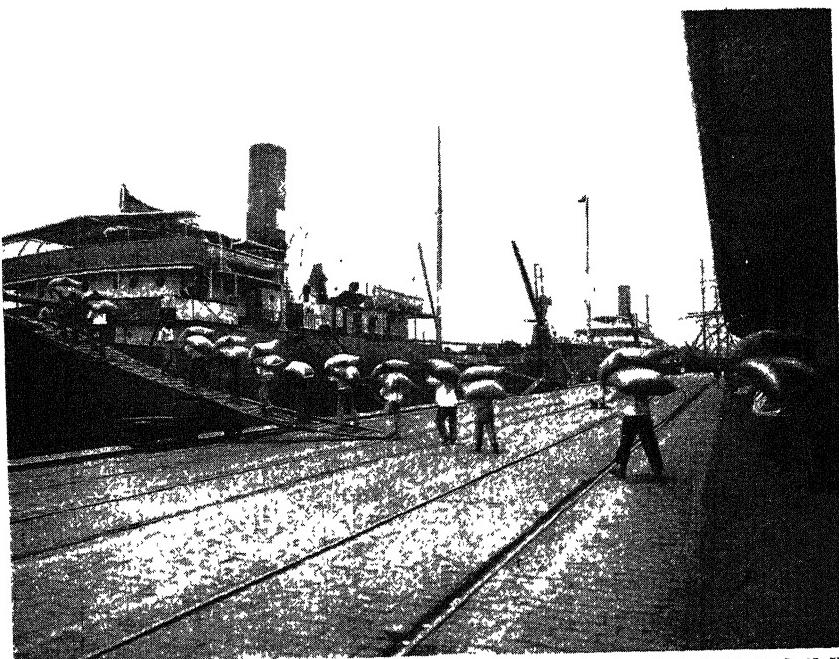
© E. M. Newman.

Fig. 341. — Picking coffee on a large plantation in Brazil. The number of people suggests to us something of the size of the plantation. The low trees make it possible to gather a large part of the berries while standing on the ground.

What coffee is. Coffee is the seed of a tree which grows only within or very near the torrid zone. On the plantations the growers keep the trees pruned so that they are not much over ten feet high. This makes it easy to pick the berries. The coffee beans that we see in the grocery stores are the seeds which grow inside a cherrylike fruit. When the fruit is ripe, it is picked by hand (Fig. 341). It is then put through machines which remove

the pulp surrounding the seeds. The seeds are enclosed in a thin papery coat similar to that which we find inside a peanut shell. This thin coat is also removed, and the seeds are thoroughly dried in the sunlight.

The distribution of coffee. After the coffee is sorted and put into sacks, ships sailing from Santos and Rio de Janeiro carry the



Courtesy National City Bank, N. Y.

Fig. 342. — Loading a ship with coffee at the port of Santos. What has been done to the coffee before it is ready for shipment? Why is it not fully prepared for use before being exported from Brazil?

coffee to the countries which cannot produce it for themselves (Fig. 342). Much of the coffee which Brazil exports comes to the United States. After reaching the large cities of our country, it is roasted and sometimes ground and packed in cans or bags before being distributed to all parts of the country. Other countries which import large quantities of Brazilian coffee are Germany, Holland, Switzerland, France, and Sweden.

The Swedes use more coffee per person than do the people

of any other country. Next to the Swedes come the people of the United States, who use about three pounds less per person than do the people of Sweden, or about thirteen pounds per year for every person in the country. The Dutch, who have owned for years the island of Java, a great coffee-producing region, are also great coffee drinkers. Only a comparatively small amount is sent to Great Britain. The people of Great Britain are very fond of tea, which they use to a large extent in place of coffee. About



Photo from Elwin Galloway.

Fig. 343.—Cacao tree with fruit hanging from trunk and branches. The large pods are easily injured by winds that beat them against the trees. For this reason plantations are generally located in protected valleys.

seventy per cent of the coffee used in the United States comes from Brazil. The other thirty per cent comes chiefly from other countries of South America and from Central America.

Cacao also produced in Brazil. Cocoa is obtained from the fruit of the cacao tree, which grows in the hot, sheltered valleys of northern Brazil. The pods which contain the seeds grow from the trunk and large branches of the trees (Fig. 343). From the seeds, which are exported mainly to the countries of Europe and

to the United States, we obtain chocolate and cocoa. Ecuador rivals Brazil in the production of cacao.

Rubber. In 1911 Brazil produced more than half of the world's supply of rubber. The Brazilian rubber tree thrives in the hot, moist climate of the Amazon Valley. The sap is collected by native Indians; then it is smoked and made into large balls called *biscuits* (Fig. 344). It is then sent down the many tributaries

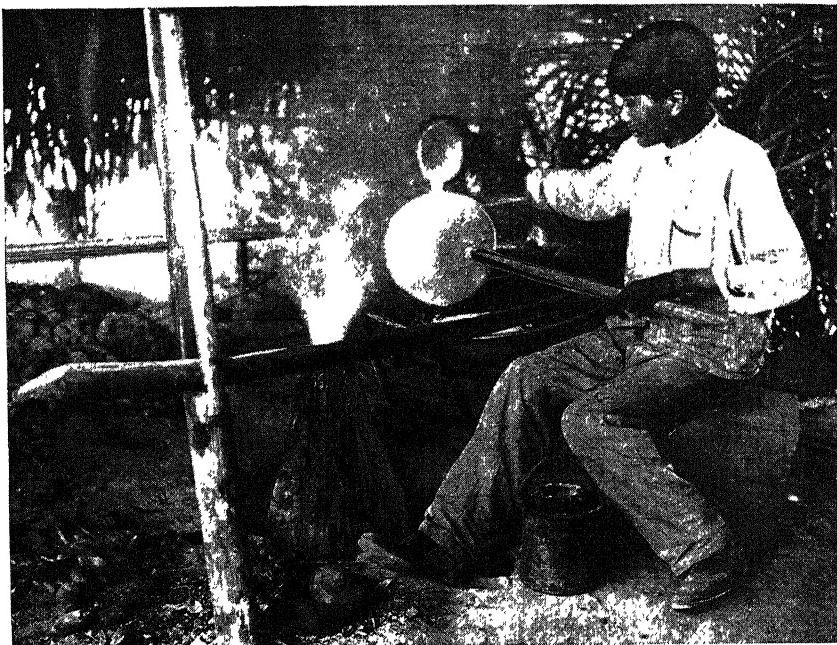


Fig. 344. — Making a rubber biscuit. The smoke from burning palm nuts changes the white liquid to a solid that is almost black. Rubber in the form of balls, or biscuits, is shipped from northern Brazil to the United States and Europe. Why is it not all used in Brazil?

of the Amazon and is shipped out of the country through the port of Para. This is why Brazilian rubber is often referred to as Para rubber.

Ever since the production of rubber on plantations proved successful (see Chapter XV), the relative amount sent out from Brazil has declined. To-day Brazil furnishes less than ten per

cent of the world's rubber output. It is estimated that the small quantity of seeds taken from Brazil in 1875 to start the rubber plantations of India have resulted in a loss to the rubber-producing countries of South America of more than \$500,000,000 per year.

Coffee and rubber the chief exports. Coffee and rubber make up more than four-fifths of the exports of Brazil. Although



Courtesy Dept. of Agriculture, Industry, and Commerce, Rio de Janeiro.

Fig. 345.—A street in Rio de Janeiro. This beautiful street and these magnificent buildings tell of wealth and culture. How is the wealth obtained? From what countries do you think the people of Latin America get their models of architecture?

Brazil sends her products to many different countries, the United States is her best customer. In 1925 we bought about one-half of her coffee and about three-fourths of her rubber. The coffee, as we have seen, is shipped from Rio de Janeiro and Santos. Rio de Janeiro is the capital and largest city of the country, having a population of more than one million people (Fig. 345). Santos

is the greatest coffee port in the world. Para, near the mouth of the Amazon, and Manaos, far up the river, owe their importance almost wholly to the rubber industry.

Brazil also produces small amounts of cotton and sugar, but there is very little for export. At times when sugar is very scarce the United States imports Brazilian sugar. Brazil exports some diamonds, but the value of her output is very much less than that of South Africa. Until the discovery of diamonds in South Africa Brazil led the world in the production of diamonds.

Why Brazil may become a great grazing country. In central and southern Brazil there are great tracts of land suitable for grazing. Some of these areas have already been used for raising cattle. As a result, hides and leather are exported. Some of the hides are sent to the United States. With the building of railroads to the grasslands of central and southern Brazil, it is probable that many more cattle will be raised and the products exported to the more thickly settled countries of Europe and North America.

Why Brazil produces few manufactured goods. Brazil's exports are almost wholly raw materials and food products. The imports of the country are very largely manufactured goods and coal, although it receives quantities of wheat and flour from Argentina. Coal comes from Great Britain and the United States and textiles and machinery from Great Britain, Germany, France, and the United States.

We must not think that because Brazil has only a small amount of coal it does no manufacturing at all. Cotton mills have increased in number until only the finer goods are imported. Water power is used for manufacturing wherever possible. Woolen goods are also manufactured to some extent. So many shoes are made that it is necessary to import only small quantities. Brazil has the advantages of producing at home cotton, wool, and hides for her mills and factories. As time goes on we may be sure that the country will supply an even larger quantity of manufactured goods for her own use.

How Brazil can advance more rapidly. Let us see why Brazil has not progressed more rapidly. Lack of coal is, of course, a

great handicap. All the great manufacturing countries have large deposits of coal. If large amounts of coal should be discovered in Brazil, all the industries of the country would be greatly helped.

Brazil is also greatly in need of more railroads. Resources far from the coast are of little value if products cannot be brought to the cities on the coast for manufacture and export. At the present time nearly all the railroads of the country are in the southeast connecting the coffee plantations with the exporting cities. Much capital is needed for building other railroads and developing the other resources of the country.

We can hardly expect, however, that much can be done in developing the northern part of Brazil where the climate makes it unfit for white men to live. It is probable that the future products of the dense jungles will be much the same as they are to-day. The country will use and export what the half-civilized Indians can gather from the wilderness. Rubber, nuts, and valuable woods are the most important products.

Brazil must also have a large population to develop her great resources. These people will doubtless come from densely populated countries of Europe. The southern part of the country has a temperate climate and is well adapted to colonization by Europeans. Already in the southern states there are large numbers of European immigrants. The people in the southernmost states are largely German, while the population of the state of which Santos is the capital is largely Italian. Brazil was first settled by people from Portugal, and Portuguese is the language of the country. The need of more immigrants is seen when we realize that at the present time less than half of the people are whites, the remainder being Indians, Negroes, and half-breeds.

QUESTIONS AND PROBLEMS

1. The Amazon Valley is a great jungle with very few inhabitants. Why is it a jungle? Why are there few people there?
2. What parts of Brazil do you think will have many inhabitants in future years? Why?
3. What changes must take place before Brazil can become an important manufacturing country?

4. What conditions cause Brazil to produce a large part of the coffee used in the world?
5. With what other countries must Brazil compete in raising coffee? Why?
6. Brazil formerly produced the greater part of the world's output of rubber. Now the greater part is produced on the plantations of the Far East. How and why has this change come about?
7. The United States is Brazil's best customer. How do you explain this?
8. If you were an emigrant going to Brazil, in what part would you settle? Why?

SUGGESTED PROJECTS AND EXERCISES

1. Make a map of Brazil showing where the following products are grown: cotton, wool, hides, coffee, rubber, cacao.
2. Make a coffee chart showing samples of coffee, pictures of the coffee tree, blossoms, and beans, and pictures of coffee picking, drying, and packing.
3. On an outline map of the world trace steamship routes from important rubber and coffee cities of Brazil to ports of the United States and Europe.

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CHAPTER XXXV

THE FARMS AND RANCHES OF ARGENTINA

The Paris of South America. If we were to visit Argentina, we should step from our ship to the docks of the largest city of the continent. Buenos Aires is called the "Paris of South America." It is a very attractive city with wide streets, beautiful parks, and fine buildings. We should see all the improvements of the large cities of our own country. If we were to walk about the streets or tour the city in an automobile, we should probably wonder what industries supply the money necessary to build so beautiful a city.

A visit to the wharves would answer our question. Here we should find the docks lined with large steamers from all parts of the world. These ships take to other countries the products which bring wealth not only to the people of the city but to the whole country as well. All along the water front are grain elevators and warehouses filled with wheat, corn, flaxseed, wool (Fig. 346), and hides. There are also enormous cold-storage houses filled with beef and mutton. All of these goods are to be transferred to ships sailing to European countries and to the United States.

Our study of the wharves and warehouses tells us the kinds of work in which most of the people of Argentina are engaged. We are reminded of our own Middle West, whose farm products are like those found on these wharves. We shall expect to find, then, somewhere in Argentina a region like that of our own prairies where wheat and corn are raised. We shall also expect to find another area similar to our Great Plains with thousands of cattle and sheep feeding on the ranches.

Physical features of Argentina. If we examine a physical map of Argentina, we find that the country consists almost wholly of a great plain lying to the east of the Andes Mountains. The soil is

deep and rich like that of our prairies and is therefore well adapted to agriculture. Moreover, this plain borders the sea so that it is easy to ship products to other countries. The coast is somewhat irregular, thus offering harbors for ships.

The extent of Argentina from north to south is greater than that of the United States. A small part of the country lies north of the Tropic of Capricorn, while the southern part is several degrees farther from the equator than any part of the United

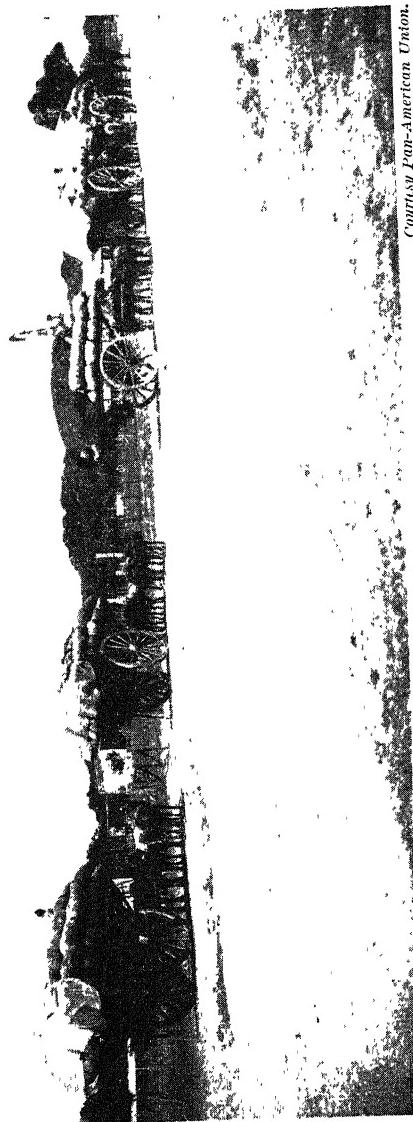


Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 346. — Interior of a large wool market at Bahia Blanca. Sheep raising is one of the sources of Argentina's wealth. Many of the manufacturing countries of Europe as well as the United States look to this country for a part of their wool supply.

States. This great extent of latitude gives Argentina great differences in temperature and therefore makes possible a great variety of agricultural products.

Climate. The country lies in two wind belts. South of latitude 35° it has the prevailing westerlies, which give up the most of their moisture on the Pacific coast, leaving southern Argentina with a small amount of rain. Northern Argentina receives its rainfall from the southeast trade winds, which blow over the land from the Atlantic. Parts of central and western Argentina re-



Courtesy Pan-American Union.

Fig. 347.—Farm wagons taking sacks of wheat to the railroad. The level land is not only good for farming but it also furnishes an excellent surface for roads and railroads. If there were hills the loads would have to be much smaller. Canvas is used to protect the grain in case of rain.

ceive little rain from either of the two wind belts. The plains in the central part of the country surrounding Buenos Aires are known as the *pampas*. Toward the east where the rainfall is plentiful, agriculture is extensively carried on (Fig. 347). Farther west where there is not enough rain for farming, cattle are raised

in large numbers. South of the farming region where the climate is cooler are the great sheep pastures of the country.

On the pampas the rainfall is much less certain than on the prairies of the United States. For this reason the crops of one year may be very much larger than those of another year. Farmers are also troubled by locusts, which sometimes come in great clouds and destroy the whole crop of grain in a few days.

Grain exports to Europe. Argentina is one of the greatest grain-raising countries of the world (Fig. 348). Wheat and corn are raised on the pampas surrounding Buenos Aires. The area devoted to farming is constantly increasing. As more land is cultivated, there is less grassland for the cattle. Therefore we find the wheat and corn crops

Fig. 348.—Argentina is the chief wheat-producing country of South America. Why is this so?

becoming larger, and the number of cattle ranges becoming somewhat smaller. This same tendency has been shown in our own country for some years. There is still much more land in Argentina on which wheat can be raised. The greater part of the grain exported by Argentina goes to the manufacturing countries of Europe.

In the United States the corn belt is south of the spring wheat



From The Geography of the World's Agriculture.

belt. In Argentina corn is raised a little farther north than wheat. Can you understand why this is so? Unlike the United States, Argentina exports most of her corn. In our country farmers find it more profitable to feed their corn to cattle and hogs than to send it to Europe. It is very likely that in years to come the farmers of Argentina will also use their corn for raising hogs for export and for fattening cattle.

Grazing an important industry.

The grazing regions extend from the coast far to the west of the wheat and corn areas (Figs. 349 and 350). There, as on parts of the Great Plains of the United States, there is not sufficient rainfall for agriculture. The raising of cattle (Fig. 349) and sheep (Fig. 350) is the most important industry of Argentina. Not many years ago cattle were of so little value in that country that the hides were the most valuable part of the animal. Cattle were killed and their hides salted and exported to the United States and Europe, the flesh being left to decay on the arid plains. Later large quantities were preserved by drying it in the sun. Meat preserved in this way can be kept in perfect condition for a long time even in a hot country. For many years dried beef has been exported to northern Brazil, Cuba, and other parts of tropical America. Use is also made of some of the meat by extracting the juices from it. These juices, or beef extracts, are then preserved and sent to other countries.

In Argentina to-day every part of the ox or the sheep is used as



From The Geography of the World's Agriculture.

Fig. 349.—How do the areas in which cattle are raised differ from those in which sheep are raised? Why?

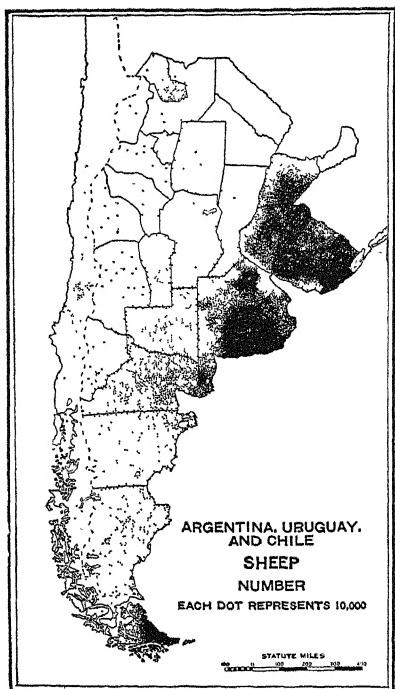
in our own country. Thousands of pounds of beef and mutton are frozen in the great refrigerating plants and are transported in refrigerator ships across the torrid zone to the United States and the countries of Europe. Many of the refrigerating plants of southern Brazil and Argentina are owned by large American companies which have their main offices in Chicago.

These companies set up refrigerating plants in South America when they found that the United States could no longer produce sufficiently large quantities of meat for the countries of Europe after supplying the home market.

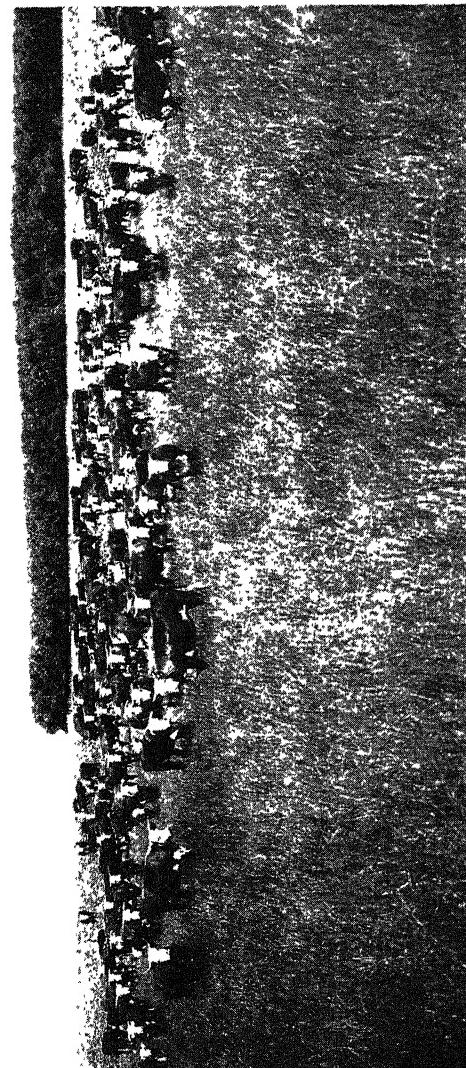
Grapes and wine. In the western part of Argentina on low foothills of the Andes nearly 250,000 acres of land are covered with vineyards. Nearly all these vineyards are in the provinces of Mendoza and San Juan. Streams from the mountains supply the water used in irrigating the land. The vineyards are cared for by their French and Italian owners, who became experts in raising grapes and making wine in their former homes in Europe. Nearly one-fifth of the landowners of Argentina are Italians. Special fast fruit trains carry grapes and other fruits from the vineyards and orchards to the large cities of the country. Many of the grapes raised in these provinces are made into wine.

Fig. 350.—Why do sheep thrive in the southern parts of these countries while cattle do not?

The forests a source of tannin. The forests of the country are chiefly in the northern part where the rainfall is heavy. Here grows a very hard wood called *quebracho* (Fig. 352). This word



From The Geography of the World's Agriculture.



Courtesy Pan-American Union.
Fig. 351.—Cattle grazing on the pampas. These cattle find an abundance of food on the rich plains. The ranchers of Argentina have greatly improved their breeds of cattle by importing cattle from the United States and Europe. Some of the particularly fine animals when sold for breeding purposes bring thousands of dollars.

means *ax breaker*. The wood is so heavy that it will not float in water. Because of its hardness it is used for paving blocks. It is also of great value for the tannin which is extracted from it. About one-third of the tannin extract exported is used in the tanneries of the United States. The quebracho trees are being cut off at a rapid rate. Unless the Argentine government takes measures to regulate the cutting, the supply will soon be exhausted.



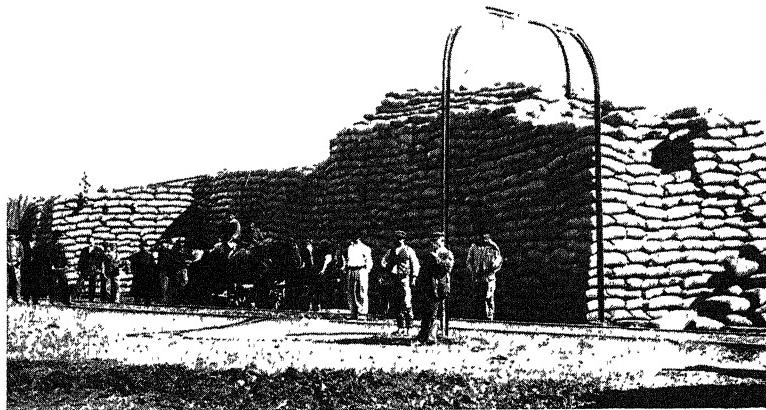
Courtesy U. S. Bureau of Foreign and Domestic Commerce.

Fig. 352.—A quebracho forest in Argentina. This heavy wood can be floated down the streams only by chaining it to logs of lighter wood. Recently hollow metal cylinders have been used in place of the lighter wood.

Lack of fuel a hindrance to manufacturing. Manufacturing has not developed to a great extent because the country has no coal and very little petroleum. The chief manufacturing industries make use of the raw materials of the country. The manufactures are therefore meat packing and flour milling. There are also a few textile mills and shoe factories. The country has the advantage of an abundance of foods and raw materials such as wheat, corn, wool, and hides. Some sugar and cotton are also raised in the northern part of the country. If Argentina had coal and iron, it might become a very important manufacturing region. As it is, practically all of the fuel used is now im-

ported from England and the United States. All goods manufactured with coal brought thousands of miles must, therefore, be sold at a high price. In many cases it is cheaper to import the manufactured goods.

A country of excellent railroads. Argentina has more railroads than any other country of South America. These lines connect the farms and ranches of the pampas with the ports of the east



Courtesy Pan-American Union.

Fig. 353. — Thousands of bushels of wheat piled beside the railroad tracks awaiting shipment. Argentina exports more than two-thirds of her wheat crop to European countries. Why is she able to do this?

coast. The level land makes it easy to build railroads in any part of the country. One of the chief lines runs west from Buenos Aires over the plains and the Andes to Valparaiso in Chile. The railroads bring to Buenos Aires, Rosario, and Bahia Blanca the wheat (Fig. 353), corn, meats, hides, quebracho wood, and other products to load the many ships which sail from those ports each year. From Buenos Aires alone more than 2500 ships loaded with goods leave each year for other countries. New docks are planned for

this city which will cover more than one hundred acres and on which will be built more than thirty miles of railroad.

Bahia Blanca is the chief port on the Atlantic coast of Argentina. If you study the map, you will see that Buenos Aires and Rosario are not on the Atlantic coast. Bahia Blanca is well connected by railroads with the agricultural lands of the interior. The docks of this city and Buenos Aires have machinery which makes it possible to load and unload ships in a very short time. Trainloads of grain are run upon the docks, where their contents are transferred directly to the ships. These modern methods of loading and unloading are great timesavers. The ships can now spend nearly all their time carrying cargoes from place to place, instead of lying idle at the wharves while their freight is being moved.

Foreign trade. The exports of Argentina are chiefly the products of its own farms and ranches. Grain and meats are sent to the countries of Europe and to the United States. Although the United States raises more corn than any other country, yet we import from Argentina each year millions of bushels of corn. We also receive from her hides and skins, wool, flaxseed, and tanning materials.

Since Argentina does comparatively little manufacturing, the country is obliged to import the greater part of its manufactured goods. The greater part of the textiles come from Great Britain and Germany. Great Britain also sends large quantities of railroad supplies, other metal products, and much coal. Argentina obtains from the United States agricultural machinery, binder twine, petroleum products, and many other articles of value.

QUESTIONS AND PROBLEMS

1. What does a visit to the wharves of Buenos Aires tell us of the occupations, climate, and resources of the country?
2. Which region do you consider more favorably placed to send products to Europe, the grain fields of Argentina bordering the sea but far to the south, or the grain fields of the United States far from the sea but in nearly the same latitude as Europe? Why?
3. Why is the agriculture of Argentina carried on chiefly in the northeastern part of the country?

4. In what way is it an advantage to importing countries to have wheat raised in both the northern and southern hemispheres?
5. In which country is the population likely to increase more rapidly in the future, the United States or Argentina? Why?
6. Why was the raising of cattle and sheep in Argentina much less profitable in former years than now?
7. What effects do you think American ownership of meat-packing plants in Buenos Aires will have upon the growth of that industry? Why?
8. How has immigration aided the development of Argentina?
9. If coal were discovered in the country, what industries would be greatly increased? Why?
10. How does it happen that the United States carries on a large trade with a country whose resources are so much like our own?

SUGGESTED PROJECTS AND EXERCISES

1. Make a products map of Argentina.
2. On an outline map of the world draw routes from the ports of Argentina to the countries with which she trades, and print the names of exports and imports.
3. In a small notebook make a collection of pictures, newspaper clippings, and maps relating to the industries and trade of Argentina.

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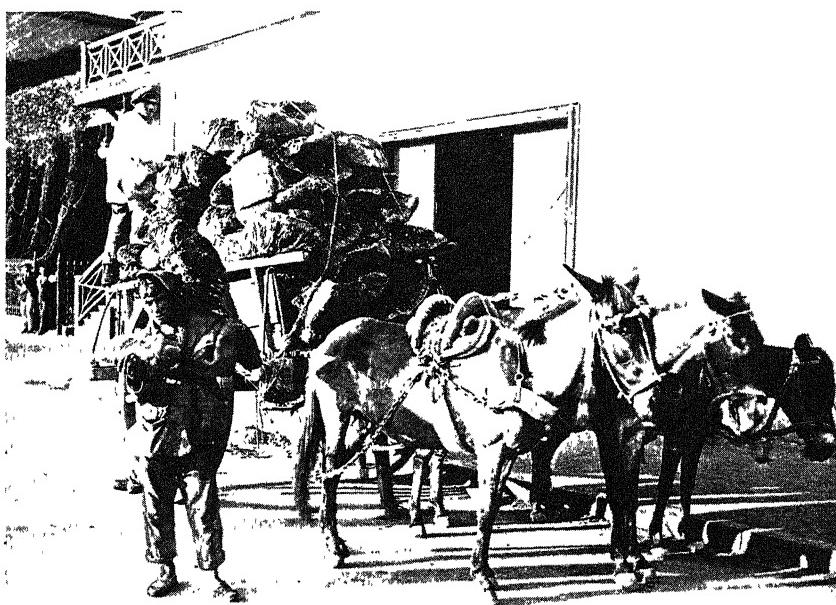
CHAPTER XXXVI

A COUNTRY WHOSE DESERT MAKES THE WORLD'S GARDENS GROW

How we depend upon Chile to make our gardens grow. During the World War when people all over the country were making war gardens, many crops did not turn out well because the fertilizers used contained no potash. This substance is very important to plant life. All our potash had come from Germany, and the war had cut off our supply. If for any reason our trade with Chile should be interrupted, our crops would suffer even more, because from that country another very important fertilizer, nitrate of soda, is obtained. Chile is the only place in the world where this nitrate is found in large quantities.

Why nitrate is found in the desert. If nitrate is so necessary for the growing of crops, and farmers in all parts of the world use it, why is this region which produces nitrate in such abundance a desert? We must remember that all plants need light, food, and water. In northern Chile there is plenty of light and food but no rain. All the water for household uses, for the animals, and for use in the nitrate-refining plants is brought through pipes from streams in the Andes more than a hundred miles away. There are no forests or vegetation of any kind (Fig. 354). All the food and clothing, in fact everything needed by the thousands of workers in the nitrate fields, must be brought from central and southern Chile or from places even farther away. Even the soil for the small parks and gardens in Iquique is brought from central Chile. If this were a rainy region, there could be no nitrate beds. Nitrate, just like sugar or salt, dissolves in water. A few months of rainy weather would dissolve all the nitrate of the region, and streams would carry it away to the ocean.

How the nitrate is mined. The beds of nitrate are sometimes found at the surface of the earth and sometimes as much as twenty or thirty feet below the surface. The rock containing the nitrate is broken up by blasting. A hole large enough for a small boy to enter is drilled entirely through the layer containing the nitrate. A boy, let down into the hole, scrapes away the gravel beneath, thus making a cavity large enough to hold the explosive.



Courtesy National City Bank, N. Y.

Fig. 354.—Eucalyptus wood brought from Bolivia to Antofagasta to be used as fuel. Why is it that trees do not grow in this part of Chile?

After inserting the fuse, the boy is pulled out. When the dynamite explodes, it breaks the rock into large pieces. Workmen then break these large lumps into smaller pieces about the size of one's fist (Fig. 355).

After the nitrate is mined and broken, it is taken to the works near at hand to be refined (Fig. 356). There it is dissolved in hot water and thus separated from the impurities which the raw nitrate contains. After the water has evaporated, the refined

nitrate is placed in bags for shipment. Iodine is a by-product of the refining process. Iodine and its compounds are used in medicines, in the treatment of wounds, and in coloring textiles. The value of the iodine obtained in a single year is between five and ten million dollars.

Importance of nitrate. More than a million tons of nitrate are used as fertilizer each year. Great Britain and Germany have

imported from Chile much more nitrate than has the United States. In those densely settled countries intensive farming has made it necessary to use a great deal of fertilizer. The United States, however, imports thousands of tons each year as fertilizer and for use in the manufacture of explosives.

Nitrate is the most valuable export of Chile. The government taxes all of the nitrate sent out of the country, and thus obtains the greater part of its income. The industry is very largely controlled by British capital.

How long Chile's supply of nitrate will last. It is thought



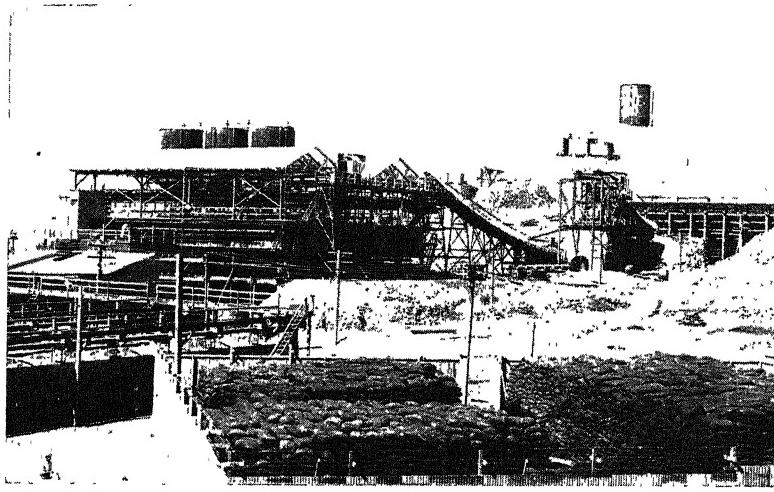
Courtesy Pan-American Union.

Fig. 355. — Here the charge has been exploded and workmen are breaking up the great blocks of crude nitrate. It is then ready to be carted to the refining plant. Why are there no trees or other plants growing here?

that Chile's supply of nitrate cannot last more than from fifty to one hundred years longer at the most. What will farmers do for nitrate then? Fortunately, nitrate can be obtained in other ways. As you know, four-fifths of the air is nitrogen. Powerful electric currents can be made to unite the nitrogen of the air with other substances, thus forming nitrates just as valuable as those mined in Chile. For a number of years nitrates have been manufactured in Norway, where the mountain streams furnish abundant power. The United States government during the World War

began the construction of a nitrate plant on the Tennessee River at Muscle Shoals, Alabama, but it has not yet been completed.

The copper mines. Copper is another mineral in which Chile is rich. This mineral has been mined there for centuries. The copper area extends all the way from central Chile near Valparaiso to the nitrate fields of the north. For a long time Chile produced more copper than any other country. Even now the United States is the only country which produces larger amounts.



Courtesy Pan-American Union.

Fig. 356.—An American nitrate plant in Chile. Here the nitrate is refined and prepared for market. Note the inclined belt which carries the crude nitrate to the refining tanks. In the foreground are the filled sacks ready for shipment.

Several of the largest copper mines are owned by American companies (Fig. 357), and many tons of copper and copper ore are shipped each year through the Panama Canal to the United States to be smelted or refined. American capitalists help in developing Chilean mines. American engineers study the mines and determine the best ways of taking the metal from the earth; American mining machinery is brought to Chile so that the copper may be obtained with as little waste as possible.

The export of iron ore. Iron occurs in several places in the country. The mines from which the most ore is being taken are

near Coquimbo. The iron mines of the country are believed to contain large amounts of iron of excellent quality. Some of the ore is smelted in Chile, and some is exported to the United States. One of the principal mines is owned by one of the large steel companies of the United States, which ships the ore to Pennsylvania where it is smelted.

Chile the only coal-producing country of South America. Chile is the only country of South America which produces coal in any quantity. Even Chile mines less than one-half of the coal she needs. She is obliged to import coal from Great Britain, Australia, and the United States. Coal is used chiefly as a source of power at the mines, for smelting the ores, and for refining nitrates. A small amount of manufacturing is carried on. Coal is also used as fuel for steamships and for the railroads of the country. Ships carrying nitrate to European countries or the United States often return loaded with coal. If Chile did not need to import coal, the ships would have difficulty in securing a return cargo.

The coal mines of Chile are peculiar in lying almost wholly under the sea. The mouths, or entrances to the mines, are of course on the land. After the shaft has been sunk vertically until the layers of coal are reached, excavations are then made in a horizontal direction. In this way mines are extended thousands of feet under the Pacific Ocean. Ships may sail over the very mine which furnished coal for their boilers. The mines are lighted by electricity, and electric cars carry the coal from all parts of the mines to the shafts. Coal is found in several places, but the chief mining regions are near Concepcion and Valdivia.

Agricultural products. Chile is a very long and narrow country. Because of its shape it is sometimes called the "Shoestring Republic." Its great extent of latitude gives great variation in climate. In the north where the nitrate fields are located, the climate, as we have seen, is hot and dry. This is because the high Andes do not allow the moisture of the southeast trade winds to reach Chile. Although northern Chile borders the Pacific Ocean, the winds do not blow from sea to land; therefore the region has no rain.

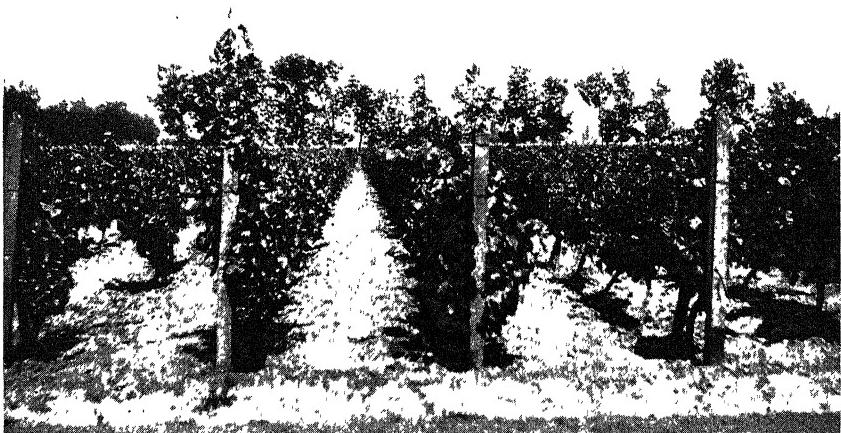
Farther south in central Chile, there is a moderate amount of



Courtesy Pan-American Union.

Fig. 357.—A copper mine in Chile owned and worked by an American company. This is the largest copper mine in the country. The ore is smelted and refined here and the metal is then exported to the United States.

rainfall. Here on the rich soil of the river valleys, lying between the high Andes and the low ranges near the ocean, intensive farming is carried on. The valleys in the northern part of central Chile have a climate similar to that of southern California. Here, as in California, fruits are raised in large quantities (Fig. 358). Grapes, oranges, lemons, pears, and other fruits are raised and sent to other countries of South America and even to other continents. It has been found that these fruits can be sent in fresh condition to the cities of the eastern coast of the United States.



Courtesy U. S. Bureau of Foreign and Domestic Commerce.

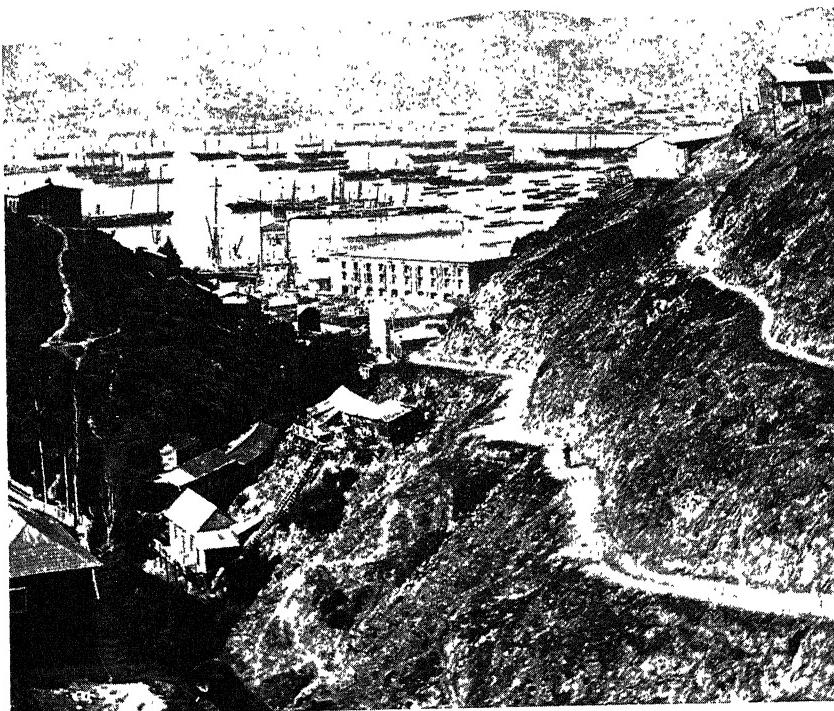
Fig. 358.—The Chilians are great wine drinkers. To meet the demand, more than 140,000 acres of land are devoted to the raising of grapes. These vines are supported by wires that are attached to posts.

Since they ripen during our winter and spring, they find a ready market in our country.

Farther south in the valleys of central Chile wheat and other grains are produced. Cattle and sheep are also raised there and in southern Chile as well. Since Chile does not do much manufacturing, hides, skins, and wool are sent to the United States and to European countries. These manufacturing countries send back to Chile shoes, textiles, and other manufactured goods.

In the south the climate is much cooler and there is an abundance of rain. Central and southern Chile receive their rainfall

from the westerly winds which blow over the country from the Pacific Ocean. Many sheep are raised in the southern provinces. It is said the farther south one goes, the better is the quality of the wool. Southern Chile has many forests. The wood of some



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Fig. 359. — The harbor of Valparaiso with the city in the distance. Valparaiso is the most important port on the western coast of South America. How do you account for this fact?

of the trees, however, is soft and is not of great value. Chile imports lumber from the United States.

Transportation and trade. Valparaiso is the chief port of Chile (Fig. 359). Besides being a trade center, it contains a number of manufacturing plants. The land where the city is located is so rugged that it was necessary to make a narrow space of level land

for the business portion of the city. The homes are built on the hillsides. If you examine the map of South America, you will see what a broken and rugged coast line Chile has.

Iquique, as we have seen, is the chief port from which nitrate is shipped. Antofagasta is connected by rail with Bolivia, which has no sea coast of its own. A large part of the foreign trade of Bolivia passes through this port.

Santiago, the capital of Chile, is situated in a valley nearly surrounded by mountains. Santiago is connected by railroad with Valparaiso, the cities and towns of the central valley, and with all the important ports to the south. Although the surface is very rugged, the country is fairly well supplied with railroads. Many short railroad lines run from the coast to the cities of the interior. Other lines connect the different parts of the great valley. Chile was the first country of South America to begin the building of railroads.

Trade with the United States. In the past Chile's trade with our country has not been so great as her trade with Great Britain. This is because the British trade began earlier than ours, and because much British capital is invested in the nitrate fields and railroads of Chile. Our trade, however, has increased rather rapidly in recent years. We receive from Chile nitrate, copper, iron ore, wool, and fruits. We send to her flour, coal, textiles, machinery for mining and farming, petroleum, lubricating oils, and lumber.

QUESTIONS AND PROBLEMS

1. If trade between the United States and other countries were cut off, what fertilizers should we be unable to get in large quantities?
2. Why is it that in northern Chile where there is so much plant food we find no plants growing? Can you explain why northern Chile has no rain while southern Chile is well watered?
3. Describe the way in which nitrate is mined and prepared for market.
4. From what parts of the world do you think nitrate will be obtained when Chile's supply is exhausted? Why?
5. How does the development of Chile's copper mines open a way for the investment of American capital and the growth of American trade?
6. Why should our country import iron ore from Chile when we have almost unlimited amounts in our own country?

7. How is the trade of Chile influenced by her agricultural products? Her forest products? Her mineral products?

8. What articles does Chile import from the United States? Why must these articles be imported?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the world draw routes from the chief ports of Chile to the principal countries with which she trades. Print the names of exports and imports.

2. In your notebook place a collection of pictures, maps, clippings, and drawings relating to the people, industries, and trade of Chile.

3. Appoint a committee to collect the three substances used in the making of commercial fertilizers. Where and how is each obtained in large quantities?

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CHAPTER XXXVII

RIVALS FOR LATIN-AMERICAN TRADE

Why manufacturing countries need markets. In the past fifty years manufacturing industries in the United States and Europe have grown at a rapid rate. With the increase in the use of machinery, goods of all kinds are produced much more rapidly than was possible when work was done by hand. Many manufacturing countries produce more goods than can be sold to their own people. For this reason manufacturers are now eager to find new markets for their products.

Why the countries of South America are good markets. In their search for markets all progressive manufacturers have turned to the countries of South America. Here they have found countries producing large amounts of grain, hides, wool, coffee, rubber, nitrate, and ores of copper, iron, and tin, but doing little manufacturing.

All these countries of South America need manufactured articles, some of them in large amounts. All are obliged to import textiles and machinery. Those in which manufacturing is carried on are obliged to import a large part of the coal used. Therefore they find it difficult to manufacture goods as cheaply as they can be imported from other countries.

Why Great Britain has a large trade with South America. Since manufacturing developed in Great Britain earlier than in any other part of the world, that country was the first to sell its goods in the markets of South America. British coal also finds a ready market in the countries of South America (Fig. 360). Great Britain had the advantage, too, of owning vessels for carrying the goods. The countries buying the largest quantities of English goods were, of course, Argentina, Brazil, and Chile. These countries are sometimes referred to by the first letters of their names as

the "A.B.C. countries." English merchants have encouraged trade with the countries of South America by investing money in the industries of those countries and by establishing English banks in their large cities. Vessels carrying manufactured goods and coal to South America return loaded with grain, hides, wool, or nitrates. For many years Great Britain met with little competition from other industrial countries in Latin-American markets.



Courtesy Dept. of Agriculture, Industry, and Commerce, Rio de Janeiro.

Fig. 360. — British coal on the wharves at Rio de Janeiro. This is one of the important cargoes carried by British ships to the countries of South America. Can you tell why?

How Germany was able to compete with Great Britain. In recent years, however, England has been obliged to compete with Germany and in less degree with a few other countries for her South American markets. In a very few years after entering this market, Germany became a strong rival. German merchants sent out agents who knew the languages of South America and who made a very careful study of the needs of each country. Agents sent to Argentina spoke Spanish; and those sent to Brazil

spoke Portuguese. The catalogues sent to merchants also described the articles to be sold in the language of the country. The articles were pictured so that the buyer could understand fully what he was buying.

The Germans were also careful to pack their goods as the peculiar conditions in South America required. In some parts of South America after goods are taken from the ships it is necessary to transport them long distances on llamas, mules, or donkeys



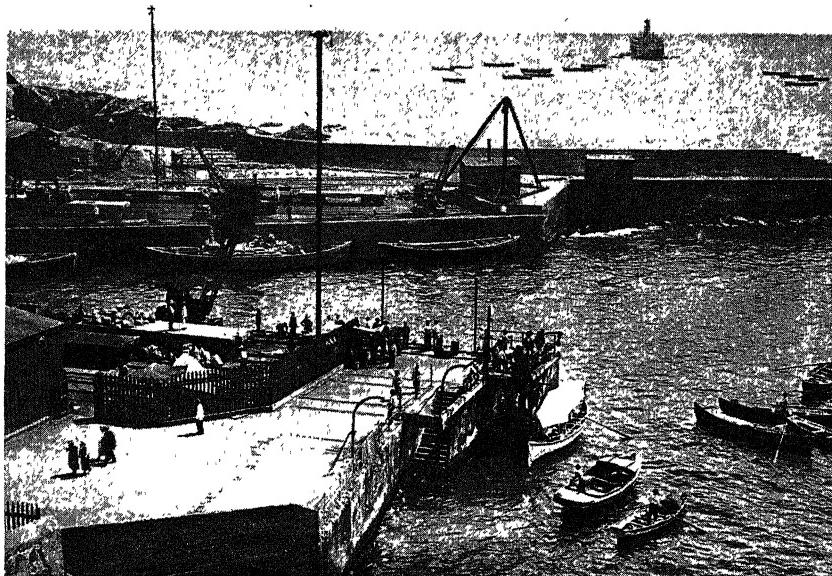
Courtesy Pan-American Union.

Fig. 361. — A railroad station in the mountains of Colombia. Here the goods are brought by train and carried up the mountain sides on the backs of animals. What can the people in the mountains do to pay for these goods?

(Fig. 361) or even on the backs of men. The llama can carry 100 pounds, the donkey 150 to 200 pounds. Packages to be carried by these animals must be one-half the weight given, as one package is carried on each side of the animal. A man can carry from 100 to 150 pounds. Goods must, therefore, be packed so that they can be carried in this way.

Along the western coast of South America there are few good harbors. Where the water is too shallow to allow steamers to come up to the wharf small boats called *lighters* go out to the ship

and take the goods to the dock (Fig. 362). Often the sea is rough and there is difficulty in bringing the small boat under the derrick from which the goods are suspended. When the boat is in the right position, the goods are dropped even if the boat is some distance below the derrick. The load dropped may consist of a crate, a box, or a barrel. The article underneath receives the blow of all articles above it. Unless goods handled in this way are



Courtesy National City Bank, N.Y.

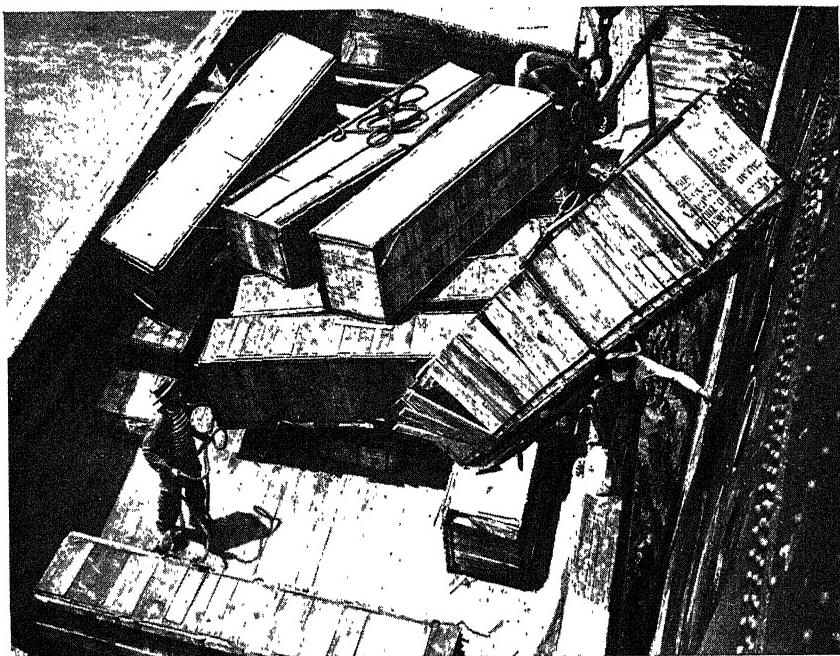
Fig. 362.—The port of Mollendo, Peru, on the open ocean. Before the breakwater was built goods could not be landed in rough weather even from lighters.

strongly packed much damage is done (Fig. 363). The Germans have been careful to pack their goods so that they can be transported safely and without repacking after reaching South America.

German merchants, like those of Great Britain, have invested money in the industries of South American countries and also established banks there. These merchants were assisted by the German government and by the commercial organizations of

their country. Before the World War no country except Great Britain carried on so large a trade with South America as did Germany.

How our trade with South America compares with that of Great Britain and Germany. Our trade with the countries of South America is much less than that of either Great Britain or Ger-



Courtesy National City Bank, N. Y.

Fig. 363. — Transferring American auto trucks from ship to lighter at the port of Callao, Peru. Poor packing is sure to result in damaged goods. If American goods are packed in this fashion the buyer may choose to order his goods from some other country.

many. It is true that a large part of Brazil's coffee and rubber comes to the United States. We also import from Argentina hides and wool worth many millions of dollars. But the value of the goods that we have sold to those countries has been much less than our purchases from them.

Among our commodities that find a market in South America are petroleum, gasoline, and lubricating oils. These articles we

produce in greater quantities than any other country. Neither Germany nor Great Britain has them for export; therefore the United States gets the trade. Our country also supplies South America, particularly Argentina, with agricultural machinery and binder twine which is used in the harvesting of wheat. We send other products of various kinds to all the countries of South America.

Why our trade with the countries of South America has been less than that of Great Britain or Germany. You may already have asked yourself why it is that we have not been able to secure so much of the South American trade as have Great Britain and Germany. It is largely because we have been very busy developing the resources of our own country. Until recently the products which we had for export were chiefly foods and raw materials. These articles were needed by the industrial countries of Europe and not by the agricultural countries of South America. In other words, for many years our products were very much like those of South America. But for the past thirty or forty years manufacturing has developed in the United States at a very rapid rate. For this reason a larger and larger part of our exports have consisted of manufactured goods. Thus you see many of the goods which we wish to export now are the same as those which Great Britain, Germany, France, and other industrial countries wish to sell.

When we began to look about for markets for manufactured goods in South America, we found the merchants of that continent buying their goods of European manufacturers. Not until 1914, when they were forced to do so by the war, did they buy of us in large quantities.

What we must do to increase our South American trade. Our consuls in South America tell us that if we wish to sell our goods in those countries we must send salesmen who know the language of the countries. We must also manufacture our goods and pack them as the buyers wish. Catalogues and letters must be written in the language of the country to which they are sent. We must establish American banks in these countries, as European merchants have already done.

Efforts of this kind have already been made. New steamship lines to South America have been established. Several American banks have set up branches in South America. More attention is being given to the Spanish language in our schools. There is no doubt that our merchants are making greater efforts than they have ever made before to hold and increase their trade with South America.

QUESTIONS AND PROBLEMS

1. Why are manufacturing countries constantly seeking new markets?
2. Why should the United States seek new markets for her manufactured goods in South American countries rather than in the countries of Europe?
3. What advantages has Great Britain in securing the trade of Latin America?
4. How did Germany succeed in getting some of Great Britain's trade away from her?
5. What lessons must the business men of the United States learn from the merchants of Germany and Great Britain?
6. How do our exports to Latin America differ from those sent by European countries? Why?
7. Why has our country been slow in increasing its trade with South American countries?
8. What articles do we import in largest quantities from Latin America? Why?
9. How do you think we can increase our trade with Latin America?
10. Why is Spanish now taught in many of our high schools and colleges?

SUGGESTED PROJECTS AND EXERCISES

1. On an outline map of the world trace steamship routes from Argentina and Brazil to England and Germany; also to ports of southern United States and to New York.
2. Trace steamship routes from the west coast of South America to our Pacific ports; also *via* the Panama Canal to New York.
3. Appoint a committee to report on "Why South American countries are good markets."
4. Prepare a special topic on "How Germany gained trade with South America."

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APPENDIX

NOTE. It is expected that teachers and pupils will have access to and will use constantly such sources of up-to-date information as are found in the *Statesman's Yearbook*, the *Yearbook of the United States Department of Agriculture*, and the *World Almanac*. The following tables of statistics will prove valuable for class use and for those schools not fully equipped with reference materials.

An asterisk (*) indicates that the information is based on estimate rather than on actual census returns.

A dagger (†) indicates negligible amount of production, if any, or the absence of reliable data.

Where dates of statistics are not given the figures are the latest available in the summer of 1925.

APPENDIX

AREA AND POPULATION OF THE UNITED STATES AND POSSESSIONS

STATE	AREA IN SQUARE MILES	POPULATION 1920	STATE	AREA IN SQUARE MILES	POPULATION 1920
Alabama.....	52,000	2,348,000	Rhode Island....	1,250	604,000
Arizona.....	114,000	334,000	South Carolina...	31,000	1,684,000
Arkansas.....	53,300	1,752,000	South Dakota...	77,600	637,000
California.....	158,300	3,427,000	Tennessee.....	42,000	2,338,000
Colorado.....	103,900	940,000	Texas.....	265,900	4,663,000
Connecticut.....	5,000	1,381,000	Utah.....	85,000	449,000
Delaware.....	2,400	223,000	Vermont.....	9,600	352,000
District of Columbia	70	438,000	Virginia.....	42,600	2,309,000
Florida.....	58,700	968,000	Washington.....	69,100	1,357,000
Georgia.....	59,300	2,896,000	West Virginia...	24,200	1,464,000
Idaho.....	83,900	432,000	Wisconsin.....	56,100	2,632,000
Illinois.....	56,700	6,485,000	Wyoming.....	97,900	194,000
Indiana.....	36,400	2,930,000	United States (continental)	3,027,000	105,711,000
Iowa.....	56,100	2,404,000	Outlying Posses- sions.....	12,149,00	
Kansas.....	82,200	1,769,000	Alaska.....	590,900	55,000
Kentucky.....	40,600	2,417,000	American Samoa.....	102	8,000
Louisiana.....	48,500	1,799,000	Guam.....	225	13,000
Maine.....	33,000	768,000	Hawaii.....	6,450	256,000
Maryland.....	12,300	1,450,000	Military and naval service abroad.....		117,000
Massachusetts.....	8,300	3,852,000	Panama Canal Zone.....	500	23,000
Michigan.....	58,000	3,668,000	Philippine Is- lands.....	115,000	10,314,000 (1918)
Minnesota.....	84,700	2,387,000	Porto Rico....	3,600	1,300,000
Mississippi.....	46,900	1,791,000	Virgin Islands of U. S.....	130	26,000 (1917)
Missouri.....	69,400	3,404,000	Total United States.....	3,743,907	117,858,000
Montana.....	147,200	549,000			
Nebraska.....	77,500	1,296,000			
Nevada.....	110,700	77,000			
New Hampshire.....	9,300	443,000			
New Jersey.....	8,200	3,156,000			
New Mexico.....	122,600	360,000			
New York.....	49,200	10,385,000			
North Carolina.....	52,400	2,559,000			
North Dakota.....	70,600	646,000			
Ohio.....	41,000	5,759,000			
Oklahoma.....	70,000	2,028,000			
Oregon.....	96,700	783,000			
Pennsylvania.....	45,100	8,720,000			

AREA, POPULATION, AND COMMERCIAL

COUNTRY	AREA	POPULATION		ANNUAL PRODUCTION OF COAL IN METRIC TONS ¹
Argentina	1,153,119	1924	9,548,000	†
Australia	2,974,581	1921	5,496,000	12,496,407
Belgium	11,752	1923	7,666,000	23,133,000
Brazil	3,285,318	1920	30,636,000	500,000
British Isles	121,700	{ 1921 and 1923 }	47,365,000	253,613,054
Canada	3,729,665		9,227,000	13,750,518
Chile	289,828		3,902,000	1,053,001
China (Provinces)	4,277,170	1923	436,095,000	21,300,000
Cuba	44,200	1923	3,143,000	†
Czechoslovakia	54,207	1921	13,613,000	28,849,181
Denmark	17,144	1921	3,290,000	†
France	212,659	1921	39,210,000	48,034,000
Germany	182,213	1919	59,853,000	272,519,000
India	1,805,332	1921	318,942,000	19,316,112
Italy	110,632	1924	39,660,000	940,754
Japan	260,738	1920	76,988,000	29,150,000
Mexico	767,200	1921	14,235,000	949,677
Netherlands	12,582	1923	7,213,000	6,850,000
Norway	124,964	1920	2,650,000	†
Poland	149,359	1921	27,193,000	28,862,000
Russia (in Europe and Asia)	8,063,771	1924	134,938,000	19,058,300
Spain	190,050	1923	21,763,000	6,500,000
Sweden	173,105	1923	6,006,000	378,861
Switzerland	15,975	1920	3,880,000	3,380
United States	3,026,789	1920	105,710,000	530,775,000

¹ Coal and iron production in most countries is measured in metric

STATISTICS OF THE LEADING COUNTRIES

ANNUAL PRODUCTION OF IRON ORE IN METRIC TONS ¹	SHIPPING IN TONS	RAILROADS, MILEAGE 1925	AUTOMOBILES AND MOTOR TRUCKS 1925	TELEPHONES, NUMBER 1925
†	199,185	22,640	178,050	173,605
726,000	766,038	24,618	291,212	318,279
153,000	560,597	5,901	93,713	136,944
†	464,734	19,036	63,650	98,564
11,051,000	19,441,000	21,792	847,916	1,285,665
5,315	1,189,242	39,771	715,962	1,072,454
972,000	181,092	5,441	16,970	30,895
1,270,000	248,108	7,770	13,680	112,070
451,933	59,523	2,227	35,100	53,393
1,053,124	†	8,497	17,300	115,738
†	1,035,943	3,092	66,567	307,977
28,534,000	3,737,244	26,200	735,000	660,127
4,383,000	2,993,000	35,416	323,000	2,385,177
1,445,000	235,100	38,270	69,127	41,240
215,000	3,033,742	12,885	114,700	172,900
168,954	3,604,147	10,414	32,698	544,433
†	†	12,983	45,782	50,980
†	2,625,741	2,405	56,300	202,868
268,815	2,681,000	2,230	27,627	168,518
392,000	†	10,514	14,618	119,985
899,000	338,792	45,742	18,500	106,076
4,540,000	1,185,000	9,614	76,000	105,213
6,200,000	1,301,000	9,762	80,498	418,318
†	†	3,716	37,500	189,429
54,267,000	15,377,000	250,156	20,051,276	16,072,758

tons. One metric ton is equivalent to 1000 Kg. or 2204.6 lb.

CITIES OF THE UNITED STATES HAVING A POPULATION OF 50,000 OR OVER

	POPULATION 1920		POPULATION 1920
Akron, Ohio.....	208,000	Fort Worth, Tex	106,000
Albany, N. Y.....	113,000	Gary, Ind.....	55,000
Allentown, Pa.....	74,000	Grand Rapids, Mich.....	138,000
Altoona, Pa.....	60,000	Harrisburg, Pa.....	76,000
Atlanta, Ga.....	201,000	Hartford, Conn.....	138,000
Atlantic City, N. J.....	51,000	Haverhill, Mass.....	54,000
Augusta, Ga.....	53,000	Hoboken, N. J.....	68,000
Baltimore, Md.....	734,000	Holyoke, Mass.....	60,000
Bayonne, N. J.....	77,000	Honolulu, Hawaii.....	83,000
Berkeley, Cal.....	56,000	Houston, Tex.....	138,000
Bethlehem, Pa.....	50,000	Huntington, W. Va.....	50,000
Binghamton, N. Y.....	67,000	Indianapolis, Ind.....	314,000
Birmingham, Ala.....	179,000	Jacksonville, Fla.....	92,000
Boston, Mass.....	748,000	Jersey City, N. J.....	298,000
Bridgeport, Conn.....	144,000	Johnstown, Pa.....	67,000
Brockton, Mass.....	66,000	Kansas City, Kan.....	101,000
Buffalo, N. Y.....	507,000	Kansas City, Mo.....	324,000
Cambridge, Mass.....	110,000	Knoxville, Tenn.....	78,000
Camden, N. J.....	116,000	Lancaster, Pa.....	53,000
Canton, Ohio.....	87,000	Lansing, Mich.....	57,000
Cedar Rapids, Iowa.....	46,000	Lawrence, Mass.....	94,000
Charleston, S. C.....	68,000	Lincoln, Neb.....	55,000
Chattanooga, Tenn.....	58,000	Little Rock, Ark.....	65,000
Chester, Pa.....	58,000	Long Beach, Cal.....	56,000
Chicago, Ill.....	2,702,000	Los Angeles, Cal.....	577,000
Cincinnati, Ohio.....	401,000	Louisville, Ky.....	235,000
Cleveland, Ohio.....	797,000	Lowell, Mass.....	113,000
Columbus, Ohio.....	237,000	Lynn, Mass.....	99,000
Covington, Ky.....	57,000	Macon, Ga.....	53,000
Dallas, Tex.....	159,000	Manchester, N. H.....	78,000
Davenport, Iowa.....	57,000	Manila, P. I.....	284,000
Dayton, Ohio.....	153,000	Memphis, Tenn.....	162,000
Denver, Colo.....	256,000	Milwaukee, Wis.....	457,000
Des Moines, Iowa.....	126,000	Minneapolis, Minn.....	381,000
Detroit, Mich.....	994,000	Mobile, Ala.....	60,000
Duluth, Minn.....	99,000	Nashville, Tenn.....	118,000
East Orange, N. J.....	51,000	Newark, N. J.....	414,000
East St. Louis, Ill.....	67,000	New Bedford, Mass.....	121,000
Elizabeth, N. J.....	96,000	New Britain, Conn.....	59,000
El Paso, Tex.....	78,000	New Haven, Conn.....	163,000
Erie, Pa.....	93,000	New Orleans, La.....	387,000
Evansville, Ind.....	85,000	New York, N. Y.....	5,621,000
Fall River, Mass.....	120,000	Niagara Falls, N. Y.....	51,000
Flint, Mich.....	92,000	Norfolk, Va.....	116,000
Fort Wayne, Ind.....	87,000	Oakland, Cal.....	216,000

CITIES OF THE UNITED STATES HAVING A POPULATION OF 50,000
OR OVER—*Continued*

POPULATION 1920	POPULATION 1920
Oklahoma City, Okla.....	91,000
Omaha, Neb.....	193,000
Passaic, N. J.....	64,000
Paterson, N. J.....	136,000
Pawtucket, R. I.....	64,000
Peoria, Ill.....	76,000
Philadelphia, Pa.....	1,823,000
Pittsburgh, Pa.....	588,000
Portland, Me.....	69,000
Portland, Ore.....	258,000
Portsmouth, Va.....	54,000
Providence, R. I.....	238,000
Racine, Wis.....	59,000
Reading, Pa.....	108,000
Richmond, Va.....	172,000
Roanoke, Va.....	51,000
Rochester, N. Y.....	296,000
Rockford, Ill.....	66,000
Sacramento, Cal.....	66,000
Saginaw, Mich.....	62,000
St. Joseph, Mo.....	78,000
St. Louis, Mo.....	773,000
St. Paul, Minn.....	235,000
Salt Lake City, Utah.....	118,000
San Antonio, Tex.....	161,000
San Diego, Cal.....	75,000
San Francisco, Cal.....	508,000
San Juan, P. R.....	72,000
Savannah, Ga.....	83,000
Schenectady, N. Y.....	89,000
Scranton, Pa.....	138,000
Seattle, Wash.....	316,000
Sioux City, Iowa.....	71,000
Somerville, Mass.....	93,000
South Bend, Ind.....	71,000
Spokane, Wash.....	104,000
Springfield, Ill.....	59,000
Springfield, Mass.....	130,000
Springfield, Ohio.....	61,000
Syracuse, N. Y.....	172,000
Tacoma, Wash.....	97,000
Tampa, Fla.....	51,000
Terre Haute, Ind.....	66,000
Toledo, Ohio.....	243,000
Topeka, Kan.....	50,000
Trenton, N. J.....	119,000
Troy, N. Y.....	72,000
Tulsa, Okla.....	72,000
Utica, N. Y.....	94,000
Washington, D. C.....	438,000
Waterbury, Conn.....	91,000
Wheeling, W. Va.....	54,000
Wichita, Kan.....	72,000
Wilkes-Barre, Pa.....	74,000
Wilmington, Del.....	110,000
Worcester, Mass.....	180,000
Yonkers, N. Y.....	100,000
Youngstown, Ohio.....	132,000

POPULATION OF THE UNITED STATES BY RACES IN DECADES

YEAR	WHITE	NEGROES	INDIANS	CHINESE	JAPANESE	TOTAL
1790	3,172,000	757,000				3,929,000
1800	4,306,000	1,002,000				5,308,000
1810	5,862,000	1,378,000				7,240,000
1820	7,867,000	1,772,000				9,638,000
1830	10,537,000	2,329,000				12,866,000
1840	14,196,000	2,874,000				17,069,000
1850	19,553,000	3,639,000				23,192,000
1860	26,923,000	4,442,000	44,000	35,000		31,443,000
1870	33,589,000	4,880,000	26,000	63,000	55	38,558,000
1880	43,403,000	6,581,000	66,000	105,000	148	50,156,000
1890	55,101,000	7,489,000	248,000	107,000	2,000	62,948,000
1900	66,809,000	8,834,000	237,000	90,000	24,000	75,995,000
1910	81,732,000	9,828,000	266,000	72,000	72,000	91,972,000
1920	94,821,000	10,463,000	244,000	62,000	111,000	105,711,000

POPULATION OF LEADING FOREIGN CITIES

Adelaide.....	Australia.....	1923	279,000
Alexandria	Egypt.....	1917	445,000
Algiers.....	Algeria.....	1921	207,000
Amsterdam.....	Netherlands.....	1923	706,000
Antwerp.....	Belgium.....	1923	301,000
Auckland.....	New Zealand.....	1924	173,000
Bagdad.....	Iraq.....	1920	250,000
Bahia.....	Brazil.....	1920	283,000
Baku.....	Azerbaijan.....	1920	250,000
Bangkok..	Siam.....	1918	630,000
Barcelona.....	Spain.....	1923	761,000
Belem (Para)	Brazil.....	1923	236,000
Belfast.....	Ireland.....	1919	393,000
Berlin.....	Germany.....	1919	1,903,000
Birmingham.....	England.....	1921	919,000
Bogota.....	Colombia.....	1921	166,000*
Bombay.....	India.....	1921	1,176,000
Bordeaux.....	France.....	1921	267,000
Bremen	Germany.....	1919	270,000
Brisbane.....	Australia.....	1923	236,000
Brussels.....	Belgium.....	1923	787,000
Bucharest.....	Rumania.....	1917	309,000

POPULATION OF LEADING FOREIGN CITIES — *Continued*

Budapest.....	Hungary.....	1921	1,185,000
Buenos Aires.....	Argentina.....	1924	1,811,000
Cairo.....	Egypt.....	1917	791,000
Calcutta.....	India.....	1921	1,132,000
Calgary.....	Canada.....	1921	63,000
Canton.....	China.....	1923	900,000
Cape Town.....	Union of South Africa.....	1918	207,000
Cardiff.....	Wales.....	1921	200,000
Chemnitz.....	Germany.....	1919	304,000
Cienfuegos.....	Cuba.....	1922	73,000
Cologne.....	Germany.....	1919	641,000
Colombo.....	Ceylon.....	1921	244,000
Colon.....	Panama.....	1920	31,000
Constantinople.....	Turkey.....	1924	1,040,000*
Copenhagen	Denmark.....	1921	561,000
Caracas.....	Venezuela.....	1920	92,000
Danzig.....	Free City.....	1924	207,000
Dresden.....	Germany.....	1919	588,000
Dublin.....	Ireland.....	1919	399,000
Durban.....	Union of South Africa.....	1921	146,000
Edinburgh.....	Scotland.....	1921	420,000
Edmonton.....	Canada.....	1921	59,000
Essen.....	Germany.....	1919	439,000
Frankfort.....	Germany.....	1919	433,000
Genoa.....	Italy.....	1921	301,000
Glasgow.....	Scotland.....	1921	1,034,000
Goteborg.....	Sweden.....	1923	436,000
Guadalajara.....	Mexico.....	1921	119,000
Guantanamo.....	Cuba.....	1922	53,000
Guatemala.....	Guatemala.....	1921	116,000
Guayaquil.....	Ecuador.....	1915	105,000
Hague, The.....	Netherlands.....	1923	383,000
Halifax.....	Canada.....	1921	58,000
Hamburg.....	Germany.....	1919	986,000
Hamilton.....	Canada.....	1921	114,000
Hankow.....	China.....	1923	1,647,000
Havana.....	Cuba.....	1922	432,000
Havre.....	France.....	1921	163,000
Hongkong.....	China.....	1923	682,000*
Johannesburg.....	Union of South Africa.....	1921	288,000
Kief.....	Russia.....	1923	404,000
Kingston.....	Jamaica.....	1921	63,000
Kobe.....	Japan.....	1920	609,000
Kyoto.....	Japan.....	1920	591,000
La Paz.....	Bolivia.....	1924	118,000
Leeds.....	England.....	1921	458,000

POPULATION OF LEADING FOREIGN CITIES — *Continued*

Leipzig.....	Germany.....	1919	636,000
Leningrad (Petrograd)	Russia.....	1923	1,067,000
Leon.....	Nicaragua.....	1921	38,000
Lima	Peru.....	1920	176,000
Lisbon.....	Portugal.....	1920	486,000
Liverpool.....	England.....	1921	803,000
Lodz.....	Poland.....	1921	452,000
London.....	Canada.....	1921	61,000
London.....	England.....	1921	4,483,000
Lyon.....	France.....	1921	562,000
Madras.....	India	1921	527,000
Madrid	Spain	1923	814,000
Managua	Nicaragua	1921	28,000
Manchester.....	England.....	1921	731,000
Marseille.....	France.....	1921	586,000
Matanzas	Cuba	1921	62,000
Melbourne	Australia.....	1923	853,000
Mexico.....	Mexico.....	1910	1,080,000
Milan.....	Italy.....	1921	718,000
Monterey	Mexico.....	1910	74,000
Montreal.....	Canada.....	1921	619,000
Moscow.....	Russia	1924	1,511,000
Munich.....	Germany.....	1919	631,000
Nagoya.....	Japan.....	1920	430,000
Naples	Italy.....	1921	780,000
Ningpo	China.....	1923	284,000
Nuremburg.....	Germany.....	1919	362,000
Odessa.....	Russia	1912	631,000
Osaka.....	Japan.....	1920	1,253,000
Oslo (Christiania).....	Norway.....	1920	258,000
Ottawa.....	Canada.....	1921	108,000
Panama.....	Panama.....	1921	61,000
Paris.....	France.....	1921	2,906,000
Peking.....	China.....	1922	924,000
Ponce.....	Porto Rico.....	1921	42,000
Port au Prince.....	Haiti	1924	125,000*
Prague.....	Czechoslovakia.....	1921	677,000
Puebla.....	Mexico.....	1910	96,000
Quebec.....	Canada.....	1921	95,000
Recife (Pernambuco).....	Brazil.....	1920	239,000
Rio de Janeiro	Brazil.....	1920	1,158,000
Rome.....	Italy.....	1921	691,000
Rosario.....	Argentina.....	1922	265,000
Rotterdam.....	Netherlands	1923	537,000
San José.....	Costa Rica.....	1923	151,000*
San Juan.....	Porto Rico.....	1920	71,000

POPULATION OF LEADING FOREIGN CITIES—*Continued*

San Salvador.....	Salvador.....	1923	82,000*
Santa Ana.....	Salvador.....	1923	71,000*
Santa Clara	Cuba.....	1922	69,000
Santa Luis Potosi.....	Mexico.....	1910	68,000
Santiago.....	Chile	1920	507,000
Santiago de Cuba	Cuba	1922	74,000
Santo Domingo	Dominican Republic.....	1921	31,000
Sao Paulo.....	Brazil.....	1920	579,000
Shanghai.....	China.....	1923	1,500,000
Sheffield.....	England	1921	491,000
Singapore.....	Straits Settlements	1921	426,000
Smyrna.....	Turkey.....	1924	425,000*
Soochow.....	China.....	1923	500,000
St. John, N. B.....	Canada.....	1921	47,000
Stockholm.....	Sweden.....	1923	430,000
Sydney.....	Australia.....	1923	981,000
Tampico.....	Mexico.....	1910	16,000
Tientsin.....	China.....	1923	800,000
Tokyo.....	Japan.....	1920	2,173,000
Toronto.....	Canada	1921	522,000
Trieste.....	Italy.....	1921	239,000
Turin.....	Italy.....	1921	502,000
Valparaiso.....	Chile	1920	182,000
Vancouver.....	Canada.....	1921	117,000
Vera Cruz.....	Mexico.....	1910	49,000
Victoria.....	Canada.....	1921	39,000
Vienna	Austria	1923	1,866,000
Warsaw.....	Poland.....	1921	936,000
Yokohama.....	Japan.....	1920	423,000

CHIEF EXPORTS OF LEADING COUNTRIES

COUNTRY	ARTICLES EXPORTED	TOTAL VALUE OF EXPORTS	VALUE OF EXPORTS TO UNITED STATES
Argentina..... (1924)	Wheat, corn, meats, linseed, wool.....	\$ 790,210,000	\$ 56,129,000
Australia..... (1924)	Wool, wheat, butter, flour, hides and skins, meats.....	494,729,000	29,147,000
Belgium..... (1924)	Textiles, iron and steel manu- factures, coal, sugar, flax .	644,600,000	50,604,000
Brazil..... (1924)	Coffee, sugar, cotton, leather, cacao, meats, rubber.....	422,684,000	181,222,000
British India..... (1924)	Cotton, jute, rice, tea, oil seeds, hides and skins.....	1,172,959,000	102,635,000
British Isles..... (1924)	Textiles, metal goods, coal...	3,760,015,000	239,559,000
Canada..... (1924)	Wheat, wood and wood prod- ucts, paper and its manu- factures, iron and iron manufactures, wood pulp, automobiles and parts, dairy products	1,044,644,000	408,670,000
Chile..... (1924)	Nitrate, copper, meats, wool, iodine.....	199,252,000	85,581,000
China..... (1924)	Raw silk, bean cake, soya beans, cotton, vegetable oils, tea.....	687,582,000	89,762,000
Cuba..... (1924)	Sugar, tobacco, fruits.....	434,865,000	362,407,000
Czechoslovakia..... (1924)	Textiles, wood and coal, sugar, iron and iron manu- factures, glass.....	503,259,000	21,242,000
Denmark..... (1924)	Dairy products and eggs, ani- mals, metals and hardware, textiles.....	330,453,000	4,623,000
France..... (1924)	Clothing, silks, cotton goods, artificial pearls, automo- biles, iron and steel manu- factures, wines.....	2,218,775,000	165,017,000
Germany..... (1924)	Dyes and chemicals, toys, metal goods, potash, textiles	1,559,844,000	117,033,000
Italy..... (1924)	Silk and artificial silk, textiles, vegetables and fruit.....	626,283,000	53,682,000
Japan..... (1924)	Raw silk, cotton and silk goods, earthenware, coal, tea	744,240,000	309,073,000

CHIEF IMPORTS OF LEADING COUNTRIES

COUNTRY	ARTICLES IMPORTED	TOTAL VALUE OF IMPORTS	VALUE OF IMPORTS FROM UNITED STATES
Argentina (1924)	Textiles, iron and steel, food stuffs, glassware and crockery, timber, chemicals	\$ 647,478,000	\$142,723,000
Australia (1924)	Textiles, machinery, vehicles, chemicals, petroleum products	618,933,000	152,168,000
Belgium (1922)	Wheat, wool, cotton, meats, coal, metal goods	815,802,000	90,795,000
Brazil (1924)	Food stuffs, machinery, iron and steel products, cotton goods, coal	305,181,000	73,810,000
British India (1924)	Textiles, metals, machinery, sugar, railway supplies	774,755,000	44,979,000
British Isles (1924)	Food stuffs, cotton and wool, oils and fats, wood and timber, metals	5,328,566,000	999,919,000
Canada (1924)	Iron and steel, cotton and woolen goods, coal, sugar, petroleum	797,899,000	518,036,000
Chile (1924)	Textiles, machinery, chemicals, metals, sugar	120,340,000	28,279,000
China (1924)	Textiles, rice, metals, cigarettes, machinery, fish, coal	925,736,000	170,124,000
Cuba (1924)	Food stuffs, manufactured goods, machinery, metals, chemical	289,831,000	194,197,000
Czechoslovakia (1924)	Textiles, cereals, fats and oils, metal goods	468,380,000	26,276,000
Denmark (1924)	Cereals, textiles, metals and hardware, coal	395,712,000	49,088,000
France (1924)	Cotton and wool, coal and coke, cereals, raw silk, oil seeds and fruits	2,103,245,000	292,523,000
Germany (1924)	Food stuffs, metals, textile materials, chemicals, leather and leather goods	2,169,716,000	406,635,000
Italy (1924)	Cotton, wool and silk, cereals, coal, iron and steel, petroleum, skins and furs	844,566,000	202,555,000
Japan (1924)	Raw cotton, iron and steel, machinery, oil cake, wool, woolen goods	1,010,451,000	276,418,000

CHIEF EXPORTS OF LEADING COUNTRIES — *Continued*

COUNTRY	ARTICLES EXPORTED	TOTAL VALUE OF EXPORTS	VALUE OF EXPORTS TO UNITED STATES
Mexico..... (1924)	Metals, petroleum and its products, henequen, fruits	\$ 238,938,000	\$183,460,000
Netherlands.... (1924)	Textiles, dairy products, sugar, coal.....	634,552,000	22,222,000
Norway..... (1924)	Wood pulp and paper, animal products, metals and manufactures, timber, fish.....	145,192,000	18,441,000
Poland..... (1924)	Textiles, petroleum, food stuffs, machinery	244,312,000	1,378,000
Russia (1924)	Rye, timber, wheat, barley, flax, leather, and furs.....	247,368,000	4,389,000
Spain (1924)	Fruits, wines, ores, olive oil, wool, drugs and chemicals	233,119,000	23,541,000
Sweden..... (1924)	Wood pulp and paper, timber, iron and iron ore, animal products.....	334,434,000	40,530,000
Switzerland.... (1924)	Silk goods, cottons, clocks, machinery, dairy products, hides and skins.....	363,934,000	32,929,000
United States .. (1924)	Cotton, mineral oils, machinery, grains, iron and steel manufactures, automobiles, tobacco.	4,497,649,000	

THE LEADING STATES IN SOME OF THE MOST IMPORTANT
(Fourteenth Census,

Dairying	Canning and Preserving
Wisconsin.....	221,447,000
New York.....	129,008,000
Minnesota.....	93,586,000
Michigan.....	64,787,000
Ohio.....	60,013,000
Slaughtering and Meat-Packing	Flour Milling
Illinois.....	1,284,103,000
Kansas.....	427,663,000
Nebraska.....	303,849,000
New York.....	256,038,000
Missouri.....	246,610,000
Minnesota.....	381,249,000
Kansas.....	206,881,000
New York.....	155,272,000
Illinois.....	116,563,000
Missouri.....	113,297,000

CHIEF IMPORTS OF LEADING COUNTRIES — (*Continued*)

COUNTRY	ARTICLES IMPORTED	TOTAL VALUE OF IMPORTS	VALUE OF IMPORTS FROM UNITED STATES
Mexico..... (1924)	Textiles, machinery, metal goods.....	\$ 155,084,000	\$112,332,000
Netherlands..... (1924)	Textiles, cereals, coal, iron and steel, wood.....	903,127,000	103,409,000
Norway..... (1924)	Textiles, bread stuffs, minerals, groceries, machinery and vehicles	214,219,000	29,369,000
Poland..... (1924)	Textiles, machinery, leather, food stuffs.....	285,376,000	35,502,000
Russia..... (1924)	Cotton, food stuffs, rubber, paper, metals, locomotives, coal.....	199,716,000	49,729,000
Spain..... (1924)	Foodstuffs, machinery, cotton and cotton goods, tobacco, metal goods, coal, fish	338,266,000	56,822,000
Sweden..... (1924)	Coal, metal goods, textile materials, grains, textile manufacturers.....	377,808,000	60,281,000
Switzerland..... (1924)	Textiles, cereals, metals.....	452,654,000	37,661,000
United States .. (1924)	Sugar, raw silk, coffee, rubber, wool and wool manufactures, paper, wood and wood products, copper, petroleum	3,575,119,000	

MANUFACTURING INDUSTRIES OF THE UNITED STATES

Value in Dollars)

Cotton Manufacturing		Silk Manufacturing	
Massachusetts.....	604,938,000	Pennsylvania.....	231,711,000
North Carolina	318,368,000	New Jersey.....	215,051,000
South Carolina.....	228,440,000	New York.....	81,683,000
Georgia.....	192,185,000	Connecticut.....	68,053,000
Rhode Island.....	177,423,000	Massachusetts.....	34,194,000
Wool Manufacturing		Manufacture of Leather	
Massachusetts.....	366,506,000	Pennsylvania	211,389,000
Pennsylvania.....	217,598,000	Massachusetts	129,595,000
Rhode Island.....	175,312,000	New York.....	98,095,000
New Jersey.....	102,302,000	Wisconsin.....	94,762,000
New York.....	100,402,000	New Jersey.....	78,012,000

THE LEADING STATES IN SOME OF THE MOST IMPORTANT MANUFACTURING
INDUSTRIES OF THE UNITED STATES — *Continued*

(Fourteenth Census, Value in Dollars)

Manufacture of Shoes		Illinois.....	173,345,000
Massachusetts		New York.....	100,593,000
New York.....		Manufacture of Agricultural Machinery	
Missouri.....		Illinois.....	128,285,000
New Hampshire.....		Wisconsin.....	43,623,000
Ohio.....		Indiana.....	31,824,000
Production of Lumber		Ohio.....	26,556,000
Washington.....		New York.....	20,421,000
Louisiana.....		Manufacture of Automobiles	
California.....		Michigan.....	1,620,383,000
Oregon.....		Ohio.....	379,436,000
Mississippi.....		New York.....	211,137,000
Production of Wood-Pulp and Paper		Indiana.....	179,065,000
New York.....		Wisconsin.....	119,381,000
Maine.....		Manufacture of Rubber Goods	
Massachusetts		Ohio.....	552,339,000
Wisconsin.....		Massachusetts.....	151,544,000
Michigan.....		New Jersey.....	97,951,000
Printing and Publishing		Connecticut.....	56,379,000
New York.....		Michigan.....	50,318,000
Illinois.....		Petroleum Refining	
Pennsylvania.....		New Jersey.....	280,995,000
Ohio.....		Texas.....	241,757,000
Massachusetts.....		California.....	213,292,000
Production of Pig Iron		Pennsylvania.....	178,826,000
Pennsylvania.....		Oklahoma.....	150,673,000
Ohio.....		Manufacture of Fertilizers	
Illinois.....		Georgia.....	47,480,000
Alabama		Maryland.....	37,014,000
New York.....		South Carolina.....	30,412,000
Production of Steel		North Carolina.....	27,551,000
Pennsylvania.....		Virginia.....	22,891,000
Ohio.....			
Indiana			

ANNUAL PRODUCTION OF IMPORTANT ARTICLES BY LEADING COUNTRIES¹

ARTICLES			
Wheat 1925	United States 669,365,000 bu.	Russia 482,164,000 bu.	Canada 416,850,000 bu. ¹
Rye 1925	Russia 820,040,000 bu.	Germany 317,418,000 bu.	Poland 257,543,000 bu.
Oats 1925	United States 1,501,909,000 bu.	Germany 384,740,000 bu.	France 330,315,000 bu.
Corn 1925	United States 2,900,581,000 bu.	Argentina 186,298,000 bu.	Russia 176,461,000
Potatoes 1925	Germany 1,532,872,000 bu.	Poland 1,069,451,000 bu.	Russia 1,055,055,000 bu.
Butter (Exported) 1924	Denmark 272,033,000 lbs.	Australia 145,281,000 lbs.	Netherlands 76,570,000 lbs.
Cheese (Exported) 1924	New Zealand 178,582,000 lbs.	Netherlands 170,352,000 lbs.	Canada 121,466,000 lbs.
Beet Sugar (Raw) 1925	Germany 1,745,600 tons	Czechoslovakia 1,681,000 tons	Russia 1,029,100 tons
Cane Sugar (Raw) 1925	Cuba 5,927,840 tons	British India 3,274,000 tons	Java 2,531,000 tons
Coffee (Exported) 1924	Brazil 1,881,758,000 lbs.	Colombia 293,074,000 lbs.	Salvador 107,603 lbs.
Tea (Exported) 1924	British India 346,111,000 lbs.	Ceylon 204,930,000 lbs.	Dutch East Indies 105,541,000 lbs.
Cotton 1925	United States 13,627,000 bales	India 5,064,000 bales	China (commercial crop) 2,114,000 bales
Flax 1925	Russia 625,225,000 lbs.	Poland 113,770,000 lbs.	Lithuania 71,859,000 lbs.
Silk (Raw) 1924	Japan (Exports) 54,068,000 lbs.	China (Exports) 17,009,000 lbs.	Italy 11,585,000 lbs.
Cattle (Number in country)	British India 146,220,000 (1923)	United States 62,150,000 (1925)	Russia 39,669,000 (1924)
Sheep (Number in country)	Australia 83,083,000 (1925)	Russia 63,493,000 (1925)	United States 39,390,000 (1924)

¹ Year Book of United States Department of Agriculture.

INDUSTRIAL AND COMMERCIAL PROGRESS OF THE

YEAR	RAILROADS	MANUFACTURES	FARM PRODUCTS
	Mileage	Value in Dollars	Value in Dollars
1870	53,000		1,958,031,000
1880	93,000	5,369,579,000	2,212,541,000
1890	159,000	9,372,437,000	2,460,107,000
1900	193,000	11,411,121,000	4,717,070,000
1910	239,000	20,672,052,000	8,498,311,000
1920	253,000	62,418,079,000	21,425,624,000
1922	250,000		
1923	250,222	60,556,000,000	16,134,000,000
1924	250,003		16,674,000,000
1925	250,156		16,964,000,000
YEAR	COPPER	COTTON	COTTON SPINDLES
	Production in Long Tons	Production in Bales	Number in Operation
1870	13,000	4,025,000	7,132,000
1880	27,000	6,357,000	10,653,000
1890	116,000	8,562,000	14,384,000
1900	271,000	10,123,000	19,472,000
1910	482,000	11,609,000	28,267,000
1920	540,000	13,440,000	35,481,000
1922	424,000	9,762,000	35,708,000
1923	641,000	10,081,000	36,260,000
1924	742,000	13,628,000	37,804,000
1925	854,000	16,086,000	37,937,000

UNITED STATES DURING THE LAST HALF CENTURY

PETROLEUM	COAL	IRON ORE	YEAR
Production in Gallons	Production in Long Tons	Production in Long Tons	
220,951,000	29,496,000	3,032,000	1870
1,104,017,000	63,823,000	7,120,000	1880
1,924,590,000	140,867,000	16,036,000	1890
2,672,062,000	240,789,000	27,553,000	1900
8,801,404,000	447,854,000	56,890,000	1910
18,603,018,000	587,737,000	69,281,000	1920
23,416,302,000	425,849,000	50,613,000	1922
30,479,484,000	572,182,000	69,811,000	1923
30,985,548,000	571,614,000	54,267,000	1924
31,745,784,000	585,083,000	62,079,000	1925
STEEL	WEALTH		YEAR
Production in Long Tons	Total Dollars	Per Capita Dollars	
69,000	30,068,518,000	779.83	1870
1,247,000	43,642,000,000	870.20	1880
4,277,000	65,037,910,000	1035.57	1890
10,188,000	88,517,307,000	1164.79	1900
26,095,000	186,299,664,000	1950.00	1910
42,133,000	290,000,000,000	2689.34	1920
35,603,000	320,804,000,000	2918.00	1922
44,944,000			1923
37,931,000			
45,393,000			

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